



**2005 Technical Information Division Annual Conference,  
Miami, FL**

**3-4 March 2005**

Configuration Management, Logistics, and Universal CM Issues by Mr. Larry Bauer, Boeing Commercial Airplanes  
Transforming Logistics by Mr. Jerry Beck, OADUSD(LPP)

Configuration Management and Data Management in DODD 5000.1 by Dr. Jay Billings, President, Defense Systems Corporation

2005 CDM Certification and Apprentice Tutorial by Mr. Charles Billingsley

Industry Keynote - Adapting Logistics Capabilities to National Security Requirements by LTG Peter Cuvillo, USA (Ret.)  
Vice President and Managing Director,  
Lockheed Martin Focused Logistics Enterprise

Integration of Systems Engineering  
& Supportability by Mr. Joe Grosson, Executive Director, Focused Logistics Enterprise & Corp.

Pre-Systems Acquisition Activities - Life Cycle Data Management in Handbook 859 by Ms. Cynthia C. Hauer,  
Millennium Data Management, Incorporated

EIA-836 CM Data Exchange and Interoperability - CM Data to Support the Logistics Process by Mr. Alan Lager, MLR Associates

Army Aviation - Logistics For The Warfighter by Dr. Thomas Pieplow, Associate Director for Aviation, AMCOM

IEEE Std 828-1990 - IEEE Standard for Software Configuration Management Plans by Mr. Gaston Ray, General Dynamics Advanced Information Systems

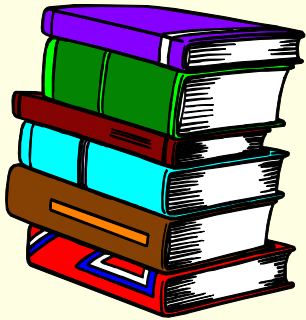
Military Engineering Data Asset Locator System (MEDALS) Data Quality by Mr. Warren M Scott, Program Manager, Military Engineering Data Assets Locator  
Systems (MEDALS), Defense Logistics Agency

IEEE 12207 "Software Life Cycle Processes"

# Annual Symposium

## Friday, March 4, 2005

- 7:30 a.m. Registration & Coffee Service
- 8:30 a.m. **Session 2**  
**Pre-Systems Acquisition – Handbook 859**  
Ms. Cynthia Hauer, President & CEO, Millennium Data Management, Inc.
- EIA-836 CM Data Exchange & Interoperability; CM Data to Support the Logistics Process**  
Mr. Al Lager, MLR Associates
- 10:00 a.m. Break
- 10:30 a.m. **Session 3**  
**Industry CM Standards, Handbooks and Logistics Relationships**  
Mr. Larry Bauer, Boeing Commercial Airplanes
- Military Engineering Data Assets Locator System**  
Mr. Warren Scott, Program Manager, Military Engineering Data Assets Locator System (MEDALS), Defense Logistics Agency, Battle Creek, Michigan
- 12:00 p.m. Lunch (Stern's Award) – LUNCH IS PROVIDED AS A PART OF YOUR REGISTRATION FEE
- 1:30 p.m. **Session 4: Production and Development**
- Configuration Management/Data Management in DoDD 5000.1**  
Mr. Jay Billings, President, Defense Systems Corporation
- Planning for Software CDM – IEEE STD 828-1990**  
Mr. Gaston Ray, General Dynamics Advanced Information Systems
- 3:00 p.m. Break
- 3:30 p.m. Adjourn Meeting

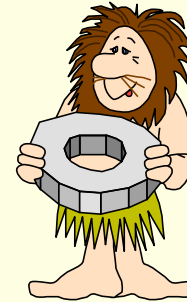


## *Introduction for the Implementation of Software Configuration Management*



# IEEE 12207 “Software Life Cycle Processes”

## History of 12207



**ISO/IEC 12207 – 1995: Standard for Information Technology – Software Life Cycle Processes**

**IEEE/EIA 12207.0 – 1996: Software Life Cycle Processes**

**IEEE/EIA 12207.1 – 1998: Software Life Cycle Processes – Life Cycle Data**

**IEEE/EIA 12207.2 – 1998: Software Life Cycle Processes – Implementation Considerations**



# IEEE 12207 “Software Life Cycle Processes”

## Abstract

ISO/IEC 12207 provides a common [framework for developing and managing software](#). IEEE/EIA 12207.0 consists of the clarifications, additions, and changes accepted by the Institute of Electrical and Electronics Engineers (IEEE) and the Electronic Industries Alliance (EIA) as formulated by a joint project of the two organizations. IEEE/EIA 12207.0 contain concepts and guidelines to foster better understanding and application of the standard. Thus this standard provides industry a basis for software practices that would be useable for both national and international business.

# IEEE 12207 “Software Life Cycle Processes”

- **Purpose:** This International Standard establishes a common framework for software life cycle processes, with well-defined terminology, that can be referenced by the software industry. It contains processes, activities, and tasks that are to be applied during the acquisition of a system that contains software, a stand-alone software product, and software service and during the supply, development, operation, and maintenance of software products. Software includes the software portion of firmware.

This International Standard also provides a process that can be employed for defining, controlling, and improving software life cycle processes.

- **Application:** Applies to the acquisition of systems and software products and services, to the supply, development, operation, and maintenance of software products, and to the software portion of firmware, whether performed internally or externally to an organization.

# IEEE 12207 “Software Life Cycle Processes”

## 4. Application of this International Standard (Clause 4) (pg 6)

This **clause** presents the software life cycle that can be employed to acquire, supply, develop, operate, and maintain software products. The **objective** is to provide a road map for the users of this International Standard so that they can orient themselves in it and apply it judiciously.

**4.1.1 Life Cycle Processes:** This International Standard **groups the activities** that may be performed during the life cycle of software into five primary processes, eight supporting processes, and four organizational processes. Each life cycle process is divided into a set of activities; each activity is further divided into a set of tasks. Subclause numbering **a.b** denotes a **process**, **a.b.c** an **activity**, and **a.b.c.d** a **task**. These life cycle processes are introduced below in depicted in figure 1 (see pg 7).

# IEEE 12207 “Software Life Cycle Processes”

## 5 PRIMARY LIFE CYCLE PROCESSES

5.1 Acquisition

5.2 Supply

5.3 Development

5.4 Operation

5.5 Maint.

## 8 SUPPORTING LIFE CYCLE PROCESSES

6.1 Documentation

6.2 Configuration Management

6.3 Quality Assurance

6.4 Verification

6.5 Validation

6.6 Joint Review

6.7 Audit

6.8 Problem Resolution

## 4 ORGANIZATIONAL LIFE CYCLE PROCESSES

7.1 Management

7.2. Infrastructure

7.3 Improvement

7.4. Training

# IEEE 12207 “Software Life Cycle Processes”

## 5 Primary Life Cycle Processes (Clause 5) (pg 9):

This clause defines the following primary life cycle processes:

- 5.1 Acquisition process;
- 5.2 Supply process;
- 5.3 Development process;
- 5.4 Operation process;
- 5.5 Maintenance process.

The activities and tasks in a primary process are the responsibility of the organization initiating and performing that process. This organization ensures that the process is in existence and functional.

# IEEE 12207 “Software Life Cycle Processes”

## 4.1.1.1 Primary Processes [task] (pg 6):

- 1) **Acquisition Process (subclause 5.1) [process]:** Defines the activities of the acquirer, the organization that acquires a system, software product or software service.
- 2) **Supply Process (subclause 5.2):** Defines the activities of the supplier, the organization that provides the system, software product or software service to the acquirer.
- 3) **Development Process (subclause 5.3):** Defines the activities of the developer, the organization that defines and develops the software product.

# IEEE 12207 “Software Life Cycle Processes”

- 4) **Operation Process (subclause 5.4):** Defines the activities of the operator, the organization that provides the service of operating a computer system in its live environment for its users.
- 5) **Maintenance Process (subclause 5.5):** Defines the activities of the maintainer, the organization that provides the service of maintaining the software product; that is, managing modifications to the software product to keep it current and in operational fitness. This process includes the migration and retirement of the software product.

# IEEE 12207 “Software Life Cycle Processes”

## 4.1.1.1 Primary Processes [task] (pg 6):

**3) Development Process:** Defines the activities of the developer, the organization that defines and develops the software product.

- Process Implementation
- System Requirements Analysis
- System Architectural Design
- Software Requirements Analysis
- Software Architectural Design
- Software Detailed Design
- Software Coding and Testing
- Software Integration
- Software Qualification Testing
- System Integration
- System Qualification Testing
- Software Installation
- Software Acceptance Support



# IEEE 12207 “Software Life Cycle Processes”

**5.3.11 System Qualification Testing.** This activity consists of the following tasks, which the developer shall perform or support as required by the contract.

**5.3.11.1. System qualification testing shall be conducted in accordance with the qualification requirements specified for the system. It shall be ensured that the implementation of each system requirement is tested for compliance and that the system is ready for delivery. The qualification testing results shall be documented.**

**5.3.11.2. The system shall be evaluated considering the criteria listed below. The results of the evaluations shall be documented.**

- a) Test coverage of system requirements.**
- b) Conformance to expected results.**
- c) Feasibility of operation and maintenance.**

**5.3.11.3. The developer shall support audit(s) in accordance with 6.7. The results of the audit(s) shall be documented.**

**5.3.11.4. Upon successful completion of the audit(s), if conducted, the developer shall:**

- a) Update and prepare the deliverable software product for Software Installation and Software Acceptance Support.**
- b) Establish a baseline for the design and code of each software configuration item.**

# IEEE 12207 “Software Life Cycle Processes”

## 5 PRIMARY LIFE CYCLE PROCESSES

5.1 Acquisition

5.2 Supply

5.3 Development

5.4 Operation

5.5 Maint.

## 8 SUPPORTING LIFE CYCLE PROCESSES

6.1 Documentation

6.2 Configuration Management

6.3 Quality Assurance

6.4 Verification

6.5 Validation

6.6 Joint Review

6.7 Audit

6.8 Problem Resolution

## 4 ORGANIZATIONAL LIFE CYCLE PROCESSES

7.1 Management

7.2. Infrastructure

7.3 Improvement

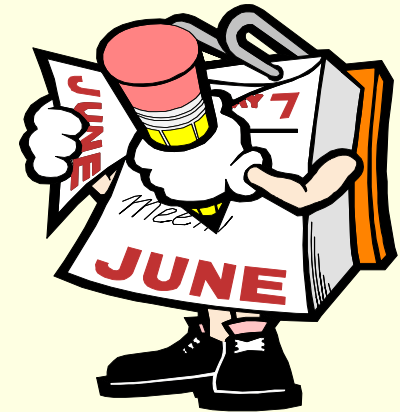
7.4. Training

# IEEE 12207 “Software Life Cycle Processes”

## 8 Supporting Life Cycle Processes (Clause 6) (pg. 27):

This clause defines the following supporting life cycle processes:

- 6.1 [a process] Documentation Process;
- 6.2 Configuration Management Process;
- 6.3 Quality Assurance Process;
- 6.4 Verification Process;
- 6.5 Validation Process;
- 6.6 Joint Review Process;
- 6.7 Audit Process;
- 6.8 Problem Resolution Process;



# IEEE 12207 “Software Life Cycle Processes”

## 4.1.1.2 Supporting Life Cycle Processes (pg 6):

- 1) **Documentation Process (subclause 6.1) [a process].**  
Defines the activities for recording the information produced by a life cycle process.
- 2) **Configuration Management Process (subclause 6.2).**  
Defines the configuration management activities.
- 3) **Quality Assurance Process (subclause 6.3).** Defines the activities for objectively assuring that the software products and processes are in conformance with their specified requirements and adhere to their established plans. Joint Reviews, Audits, Verification, and Validation may be used as techniques of Quality Assurance.

# IEEE 12207 “Software Life Cycle Processes”

- 3) **Verification Process (subclause 6.4).** Defines the activities (for the acquirer, the supplier, or an independent party) for verifying the software products and services in varying depth depending on the software project.
- 4) **Validation Process (subclause 6.5).** Defines the activities (for the acquirer, the supplier, or an independent party) for validating the software products of the software project.
- 5) **Joint Review Process (subclause 6.6).** Defines the activities for evaluating the status and products of an activity. This process may be employed by any two parties, where one party (reviewing party) reviews another party (reviewed party) in a joint forum.

# IEEE 12207 “Software Life Cycle Processes”

- 6) **Audit Process (subclause 6.7).** Defines that activities for determining compliance with the requirements, plans, and contract. This process may be employed by any two parties, where one party (auditing party) audits the software products or activities of another party (audited party).
- 7) **Problem Resolution Process (subclause 6.8).** Defines a process for analyzing and removing the problems (including nonconformances), whatever their nature or source, that are discovered during the execution of development, operation, maintenance, or other processes.

# IEEE 12207 “Software Life Cycle Processes”

## 6.2 Configuration Management Process [a process] (pg. 29):

The Configuration Management Process is a process of applying administrative and technical procedures throughout the software life cycle to: Identify and define software items in a system; control modifications and releases of the items; record and report the status of the items and modification requests; ensure the completeness, consistency, and correctness of the items; and control storage, handling, and delivery of the items.

### List of Activities:

6.2.1 Process Implementation [activity]. This activity consists of the following tasks:

# IEEE 12207 “Software Life Cycle Processes”

**6.2.1.1 A configuration management plan shall be developed [task]. The plan shall describe:**

- **The CM Activities;**
- **Procedures and Schedule for performing these activities;**
- **The organization(s) responsible for performing these activities;**
- **and their relationship with other organizations, such as software development or maintenance. The plan shall be documented and implemented.**



# IEEE 12207 “Software Life Cycle Processes”

**6.2.2 Configuration Identification [activity].** This activity consists of the following tasks:

**6.2.2.1 [task]** A scheme shall be established for the identification of software items and their versions to be controlled for the project. For each software CI and its versions, the following shall be identified: the documentation that establishes the baseline; the version references; and other identification details.

**6.2.3 Configuration Control.** This activity consists of the following task:

**6.2.3.1** The following shall be performed: identification and recording of change requests; analysis and evaluation of the changes; approval or disapproval of the request; and implementation, verification, and release of the modified software item. An audit trail shall exist, whereby each modification, the reason for the modification, and authorization of the modification can be traced. Control and audit of all accesses to the controlled software items that handle safety or security critical functions shall be performed.

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# IEEE 12207 “Software Life Cycle Processes”

**6.2.4 Configuration Status Accounting.** This activity consists of the following tasks:

**6.2.4.1** Management records and status reports that show the status and history of controlled software items including baseline shall be prepared. Status reports shall include the number of changes for a project, latest software item versions, release identifiers, the number of releases, and comparisons of releases.

**6.2.5 Configuration Evaluation.** This activity consists of the following tasks:

**6.2.5.1** The following shall be determined and ensured: the functional completeness of the software items against their requirements and the physical completeness of the software items (whether their design and code reflect an up-to-date technical description).

# IEEE 12207 “Software Life Cycle Processes”

**6.2.6 Release Management and Delivery.** This activity consists of the following task:

**6.2.6.1** The release and delivery of software products and documentation shall be formally controlled. Master copies of code and documentation shall be maintained for the life of the software product. The code and documentation that contain safety or security critical functions shall be handled, stored, packaged, and delivered in accordance with the policies of the organizations involved.

# IEEE 12207 “Software Life Cycle Processes”

## 5 PRIMARY LIFE CYCLE PROCESSES

5.1 Acquisition

5.2 Supply

5.3 Development

5.4 Operation

5.5 Maint.

## 8 SUPPORTING LIFE CYCLE PROCESSES

6.1 Documentation

6.2 Configuration Management

6.3 Quality Assurance

6.4 Verification

6.5 Validation

6.6 Joint Review

6.7 Audit

6.8 Problem Resolution

## 4 ORGANIZATIONAL LIFE CYCLE PROCESSES

7.1 Management

7.2. Infrastructure

7.3 Improvement

7.4. Training

# IEEE 12207 “Software Life Cycle Processes”

## Four Organizational Processes (pg. 42):

**The activities and tasks in an organizational process are the responsibility of the organization using that process. The organization ensures that the process is in existence and functional.**

**7.1 Management Process**

**7.2 Infrastructure Process**

**7.3 Improvement Process**

**7.4 Training Process**

# IEEE 12207 “Software Life Cycle Processes”

## 4.1.1.3 Organizational Life Cycle Processes (pg 8):

- 1) **Management Process (subclause 7.1) [a process]**. Defines the basic activities of the management, including project management, related to the execution of a life cycle process.
- 2) **Infrastructure Process (subclause 7.2)**. Defines the basic activities for establishing the underlying structure of a life cycle process.
- 3) **Improvement Process (subclause 7.3)**. Defines the basic activities that an organization (that is, acquirer, supplier, developer, operator, maintainer, or the manager of another process) performs for establishing, measuring, controlling, and improving its life cycle process.
- 4) **Training Process (subclause 7.4)**. Defines the activities for providing adequately trained personnel.

# IEEE 12207 “Software Life Cycle Processes”

## *SUMMARY*

### IEEE/EIA 12207.0: Software Life Cycle Processes

- **Purpose:** This International Standard establishes a *common framework for software life cycle processes*, with well-defined terminology, that can be referenced by the software industry.
- **Application:** Applies to the acquisition of systems and software products and services, to the supply, development, operation, and maintenance of software products, and to the software portion of firmware, whether performed internally or externally to an organization.

# IEEE 12207 “Software Life Cycle Processes”

## A. Five Primary Processes

1. Acquisition Process
2. Supply Process
3. Development Process
4. Operation Process
5. Maintenance Process

## B. Eight Supporting Processes

1. Documentation Process
2. Configuration Management Process
3. Quality Assurance Process
4. Verification Process
5. Validation Process
6. Joint Review Process
7. Audit Process
8. Problem Resolution Process



# IEEE 12207 “Software Life Cycle Processes”

## C. Four Organizational Processes

1. **Management Process**
2. **Infrastructure Process**
3. **Improvement Process**
4. **Training Process**

# IEEE 12207 “Software Life Cycle Processes”

## 5 PRIMARY LIFE CYCLE PROCESSES

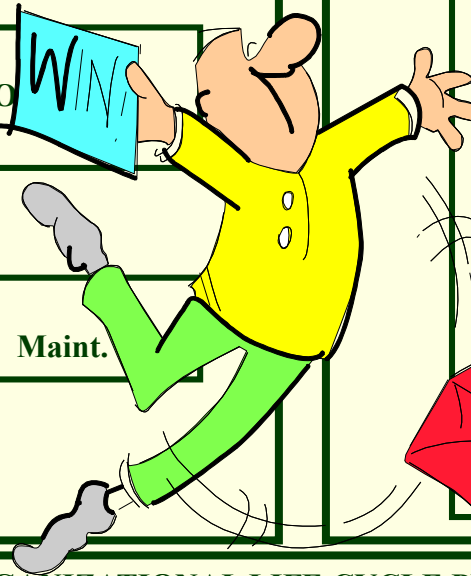
5.1 Acquisition

5.2 Supply

5.3 Development

5.4 O

5.5 Maint.



## 8 SUPPORTING LIFE CYCLE PROCESSES

6.1 Documentation

6.2 Configuration Management

6.3 Quality Assurance

6.4 Verification

6.5 Validation

6.6 Joint Review

6.7 Audit

6.8 Problem Resolution

## 4 ORGANIZATIONAL LIFE CYCLE PROCESSES

7.1 Management

7.2. Infrastructure

7.3 Improvement

7.4. Training

# **Configuration Management, Logistics, and Universal CM Issues**

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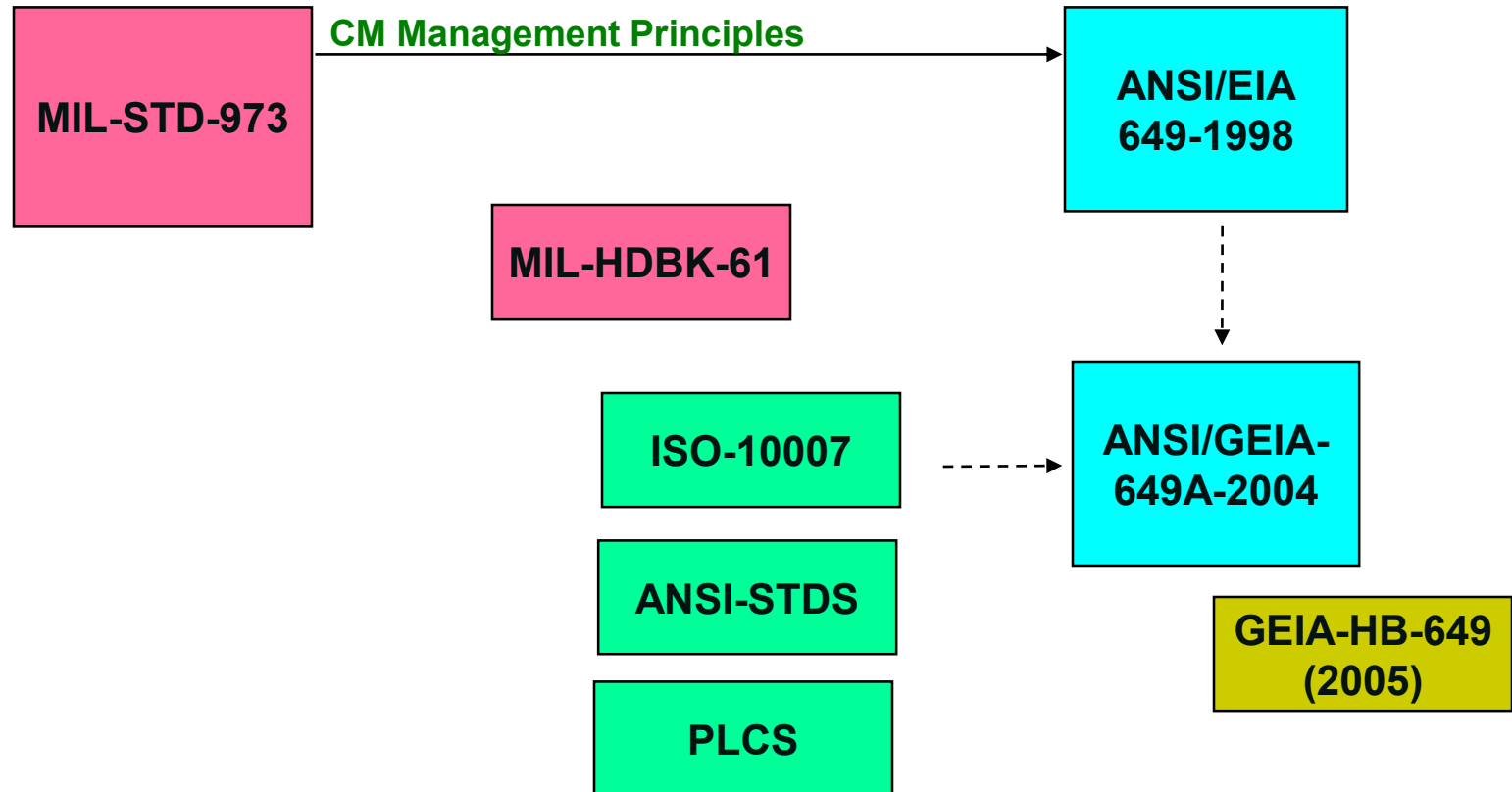
Larry Bauer  
Boeing Commercial Airplanes

NDIA Conference  
Miami

March 4-5, 2005  
[larry.d.bauer@boeing.com](mailto:larry.d.bauer@boeing.com)

# Configuration Management Standards Evolution

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# CM Overview

## CM Functions per GEIA-649A

### CM PLANNING & MANAGEMENT

*Selection, tailoring, guidance, oversight*

CONFIGURATION IDENTIFICATION

*Attributes, identifiers, baselines*

CONFIGURATION STATUS ACCOUNTING

*CM information & status*

CONFIGURATION CHANGE MANAGEMENT

*Manage changes*

CONFIGURATION VERIFICATION/AUDIT

*Verify performance & consistency*

*Separate in 649;  
Merged in 649A*



CM OF DIGITAL DATA

*Assure data integrity*

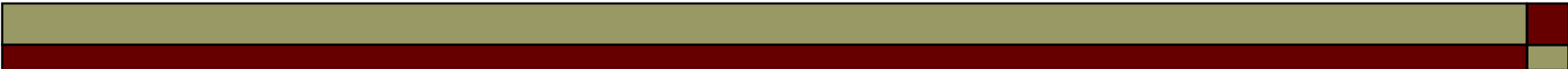


# **GEIA-HB-649 (DRAFT)**

## **Implementation Guide for Configuration Management**

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- **Handbook providing guidance for the implementation of a robust CM process regardless of:**
  - **product complexity,**
  - **size,**
  - **customer or**
  - **business objectives**
- **Provides advice and guidance for tailoring CM processes according to need and business requirements**



# **GEIA-HB-649 (DRAFT)**

## **Implementation Guide for Configuration Management (Cont)**

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- **Targeted for release 2<sup>nd</sup> quarter 2005**
- **NOT a replacement for MIL-HDBK-61**



# 5 Functions of CM

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- **How do the 5 Functions of CM support Logistics?**
  - **Planning and Management**
  - **Identification**
  - **Change Management**
  - **Configuration Status Accounting**
  - **Verification and Audit**



# CM Planning and Management

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- To assure that the **appropriate CM processes, tools, and activities** are applied
- To establish CM **organizational responsibilities**
- To determine the necessary **resources and facilities**

# CM Planning and Management (cont)

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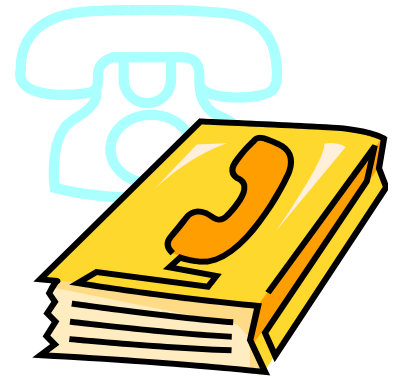
- To provide a basis for **continuous improvement**
- To enhance the **maturity** of the enterprises process
- To ensure data **preservation** and **interoperability**



# Configuration Identification

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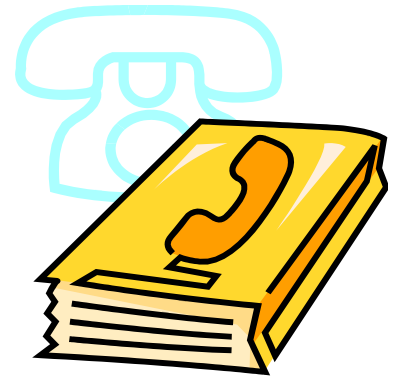
- Determines **structure** of the product & documentation
- Defines **performance, interface** & other attributes
- Provides **unique identity** to product, components and documentation



# Configuration Identification (cont)

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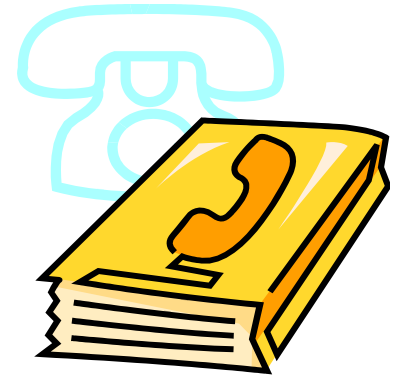
- Prescribes **identification marking**
- Modifies **product and document identifiers** to reflect incorporation of major changes
- Maintains **release control** and **baseline** definition
- Provides **reference for changes & corrective actions**



# Configuration Identification (cont)

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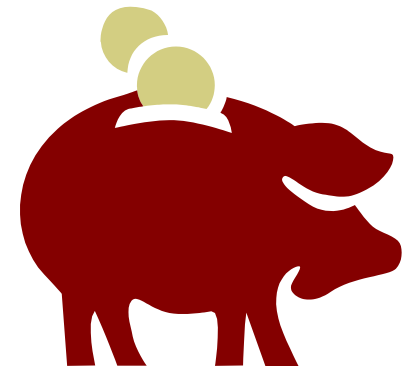
- Correlates **document revision** level to **product configuration**
  - Enables user to distinguish between **product versions**
  - Enables service person to **correlate product to instructions**
  - Correlates units to **warranty/service life**



# Configuration Change Management

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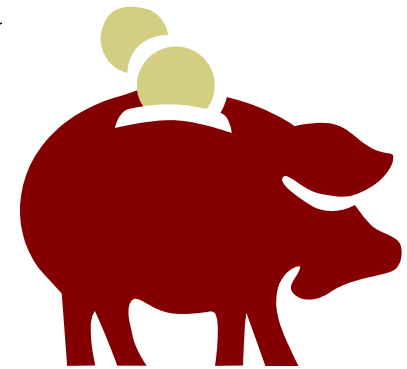
- Enable change decisions to be based on knowledge of **complete change impact**
- Limit changes to those which are **necessary** or offer **significant benefit**
- Facilitate **evaluation of cost, savings & trade-offs**



# Configuration Change Management (cont)

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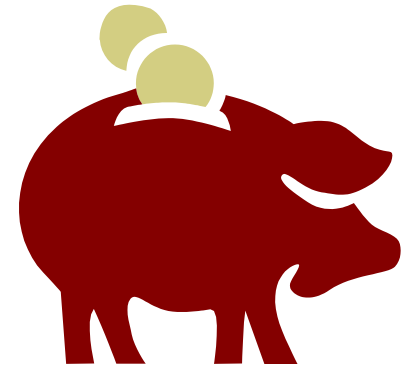
- Ensure **customer interests** are considered
- Provide **orderly communication** of change information
- Preserve configuration control at **product interfaces**
- Maintain and control a **current configuration baseline**



# Configuration Change Management (cont)

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- Maintain **consistency** between product and documentation
- Document and **limit variances**
- Facilitate continued **supportability** of the **product** after change





# Configuration Status Accounting

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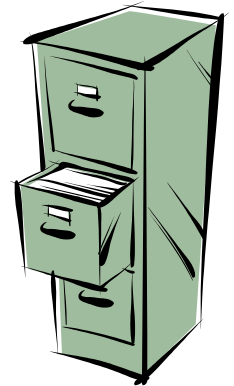
- Enables retrieval of information concerning **change decisions** and **change impacts**
- Supports inquiries concerning **future planning of design changes**, investigation of design problems, warranties, shelf and operating life calculations, etc.
- Access to **complete configuration information on a product**, any individual product unit, or group of product units



# Configuration Status Accounting

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- Access to **accurate identification** of each **delivered product unit**
- Improves capability to **identify, produce, inspect, deliver, operate, maintain, repair, and refurbish products**
- Enhances availability of **accurate information on spare parts** and maintenance support
- Source for **configuration history**



# Verification and Audit

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- Ensure the product design provides the agreed to **performance** capabilities
- Validate the **integrity** of the configuration documentation
- Verify the **consistency** between a product and its configuration documentation
- Provide confidence in establishing a **product baseline**



# Verification and Audit

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- Ensure a **known configuration** as a basis for operation and maintenance instructions, training, spares and repair parts.
- Determine that an adequate **process(es)** is in place to provide continuing control of the configuration
- Provides for continuous CM **process** improvement



# CM Support of Logistics

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- **Provides current identification of:**

- Items in inventory by location
- Maintenance, Repair and Service Manuals and Records

- **Provides Records of:**

- Repairs
- Modifications
- Removals



# CM Support of Logistics (CONT)

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- **Validates:**

- Inventory
- Location of items
- Configuration of in-service and retired items

- **Supports:**

- Location of needed Spares
- Visibility of upgrades, qualified replacements, and authorized substitutions



# Global CM and Universal CM Issues

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- **CM issues are common throughout industry and government**
  - Supplier Management
  - Documentation Hierarchies
  - Efficient and Effective Change Management
  - Level of Rigor/intensity of CM processes in Product Development vs. Production
  - Control of Test/Development Configurations



# Global CM and Universal CM Issues

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- **CM issues are common throughout industry and government**
  - Tool selection and integration
  - Control of multiple Software versions
  - CM organization is popular after an accident or incident
  - Accurate repair history
  - Retrofit control





# CM and Logistics - Summary

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- **Configuration Management provides logistics with accurate:**
  - Configuration Identification
  - Configuration Change history
  - Inventory Management
  - Upgrade and Substitution visibility
  - Repair and Service records
  - Removal visibility



# ***Transforming Logistics***

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## **Technical Information Division Symposium** ***Achieving Knowledge-Enabled Logistics***

**Jerry Beck OADUSD(LPP)**

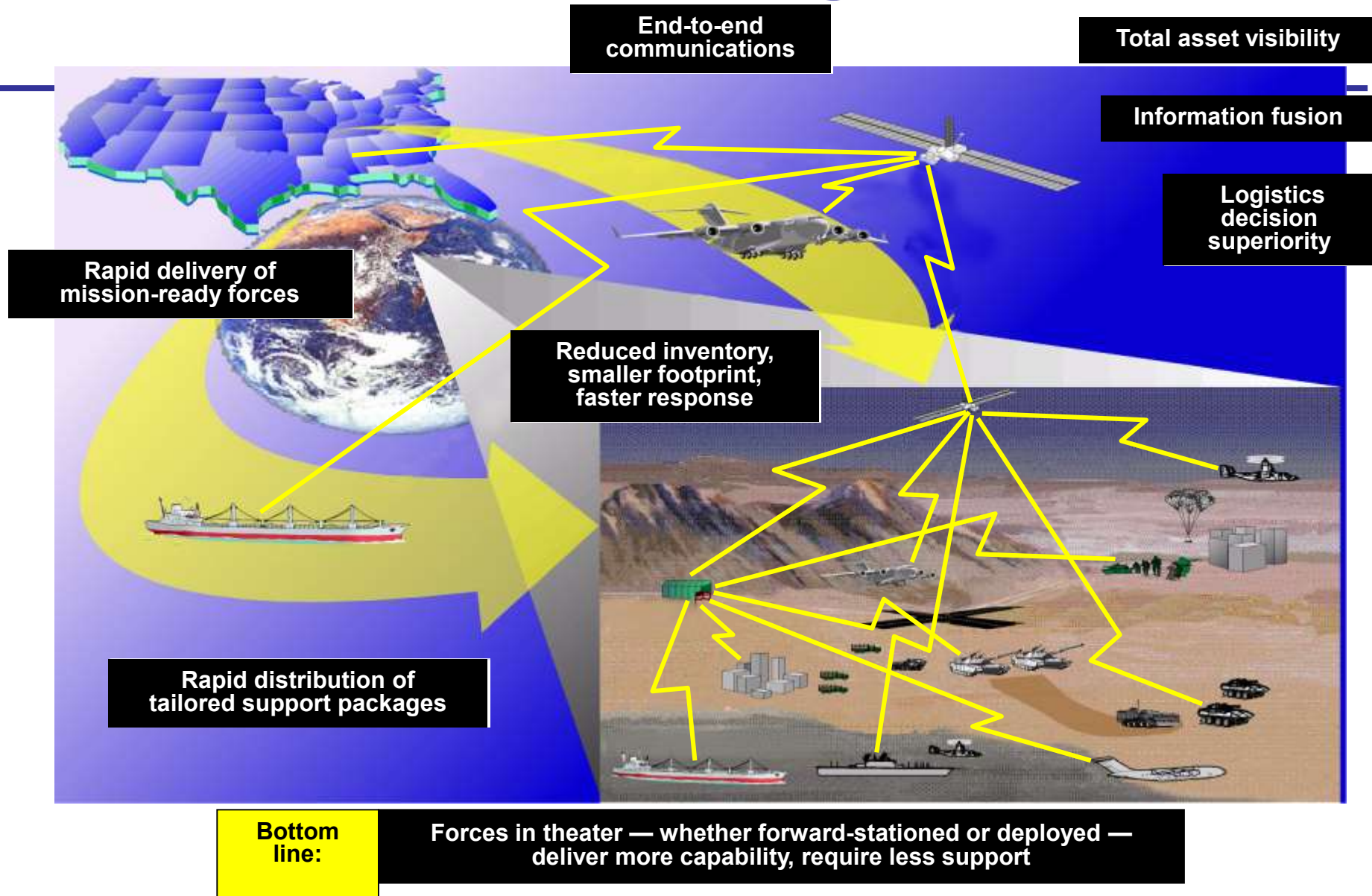
**3 March 2005**

# Near-Term Transformation Priorities (Joint Logistics Board)

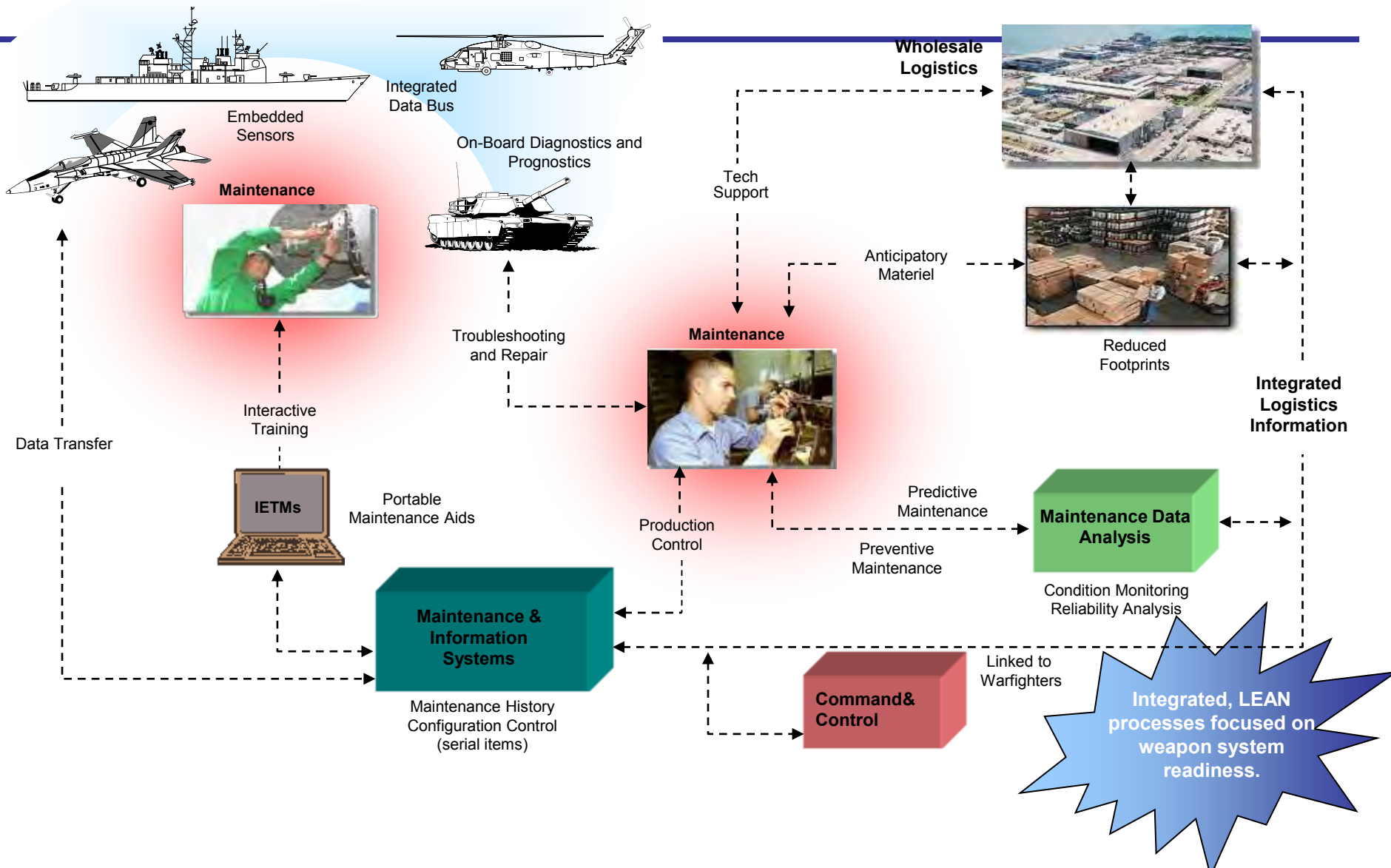
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- Implement meaningful and actionable metrics
- *Accelerate Performance-Based Logistics*
- *Develop a way ahead for Maintenance Excellence*
- Facilitate Distribution Process Owner success
- Streamline material flows
- Assess Customer Pay Opportunities
- Coordinate Logistics Enterprise Integration
- *Rationalize a corporate DoD Logistics vision into a coherent Transformation Roadmap - Focused Logistics*

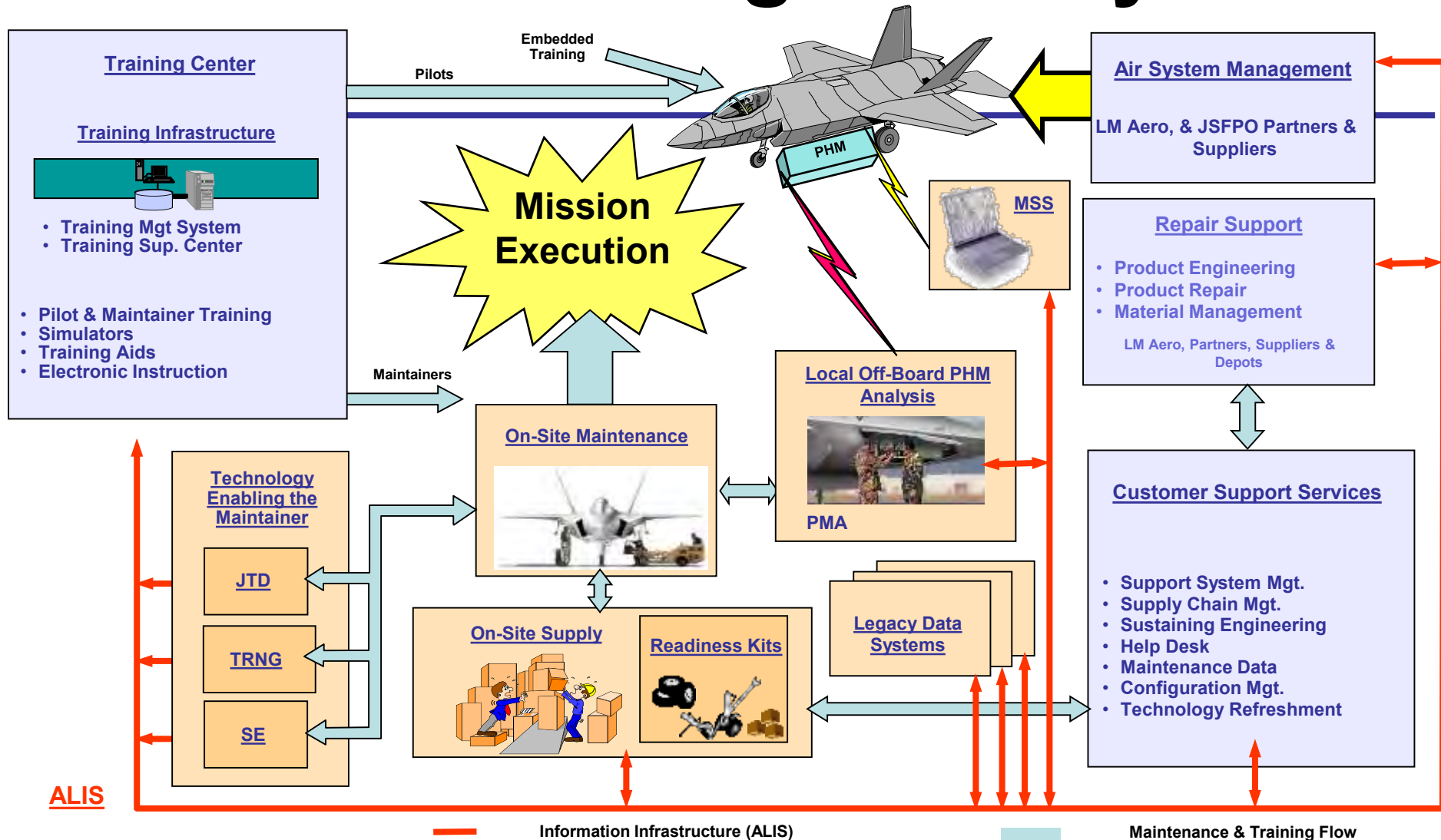
# Focused Logistics



# Achieving Maintenance Excellence



# Autonomic Logistics System



*Autonomic Logistics System Provides an Affordable  
Rapid Response Capability to the Warfighter*



# Army Stryker Vehicle

## Integrated Weapon System Status and Health Management

Sensor-Based

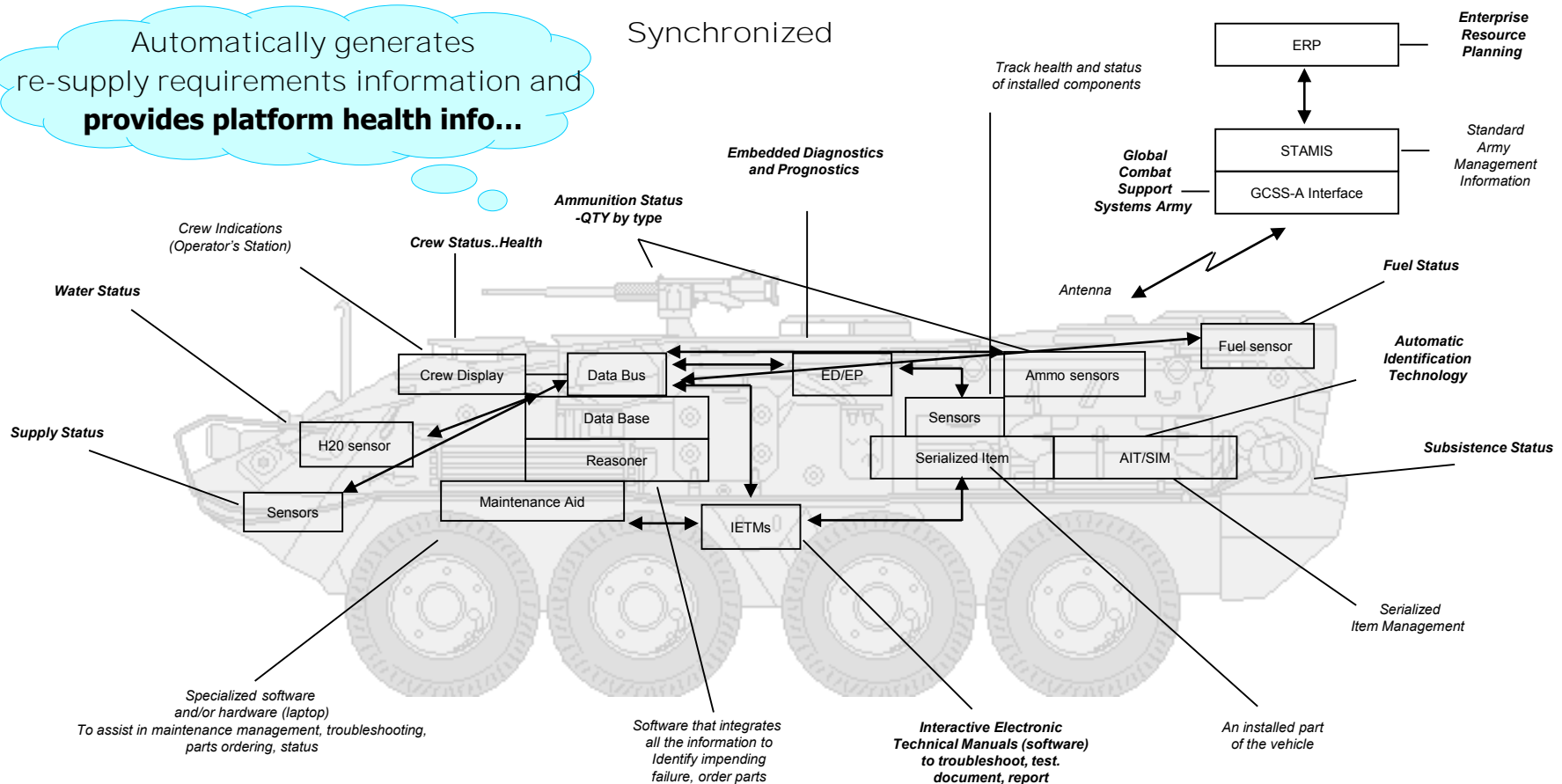
Self Monitoring

Self Reporting

Automatically feeds Army Shared Data Environment

Synchronized

Automatically generates  
re-supply requirements information and  
**provides platform health info...**



# Blackhawk HUMS

## Description:

- On-board diagnostics and prognostics.
- Crash survivable cockpit voice and data recorder.
- Obtains real time vibration, rotor smoothing and aircraft health usage info.

## Background:

- Successful HUMS demonstration on-going.
- Proposed cost funds UH-60M integration.

## Benefits:

- Obtains real time vibration, rotor smoothing and aircraft health usage info.
- Supports predictive methods to allow replacement of parts prior to catastrophic failure.
- Reduces O&S costs.
- Improves readiness.

## Health and Usage Monitoring System (HUMS)



Fleet Management Recorder (FMR)



*Incident Investigation  
Direct Download  
through Ethernet*





# ***PBL is Performance -Based Life Cycle Product Support***

**PBL Guidance:** A strategy for weapon system product support that employs the purchase of support as an **integrated, affordable, performance package designed to optimize system readiness.** It establishes performance goals for a weapon system through a support structure based on **long-term performance agreements** with clear lines of authority and responsibility to continuously meet the users needs.

## ➤ Functions That May Be the Responsibility of the Provider:

- |                                      |                                          |
|--------------------------------------|------------------------------------------|
| ➤ Obsolescence Management            | ➤ Transportation & Warehousing           |
| ➤ Requirements Determination         | ➤ Technical Data Management              |
| ➤ Engineering and Technical Services | ➤ Retrograde Management                  |
| ➤ Configuration Management/Control   | ➤ FMS Support (If Applicable)            |
| ➤ Technology Insertion               | ➤ Public/Private Partnerships or Teaming |

# *PBL Weapon System Support*

*Real-Time*

*System Status*

**Industry/Government**



**Partnerships**

**Buys  
Performance  
As a Package**  
(Including Surge/Flexibility)

**Weapon System  
Management**



**Force Provider**



**PBA**

**PBA**

Ensure system is  
sustained at optimum  
level per PBA

Provide continuous,  
reliable, affordable  
support per PBA

*Acquisition*

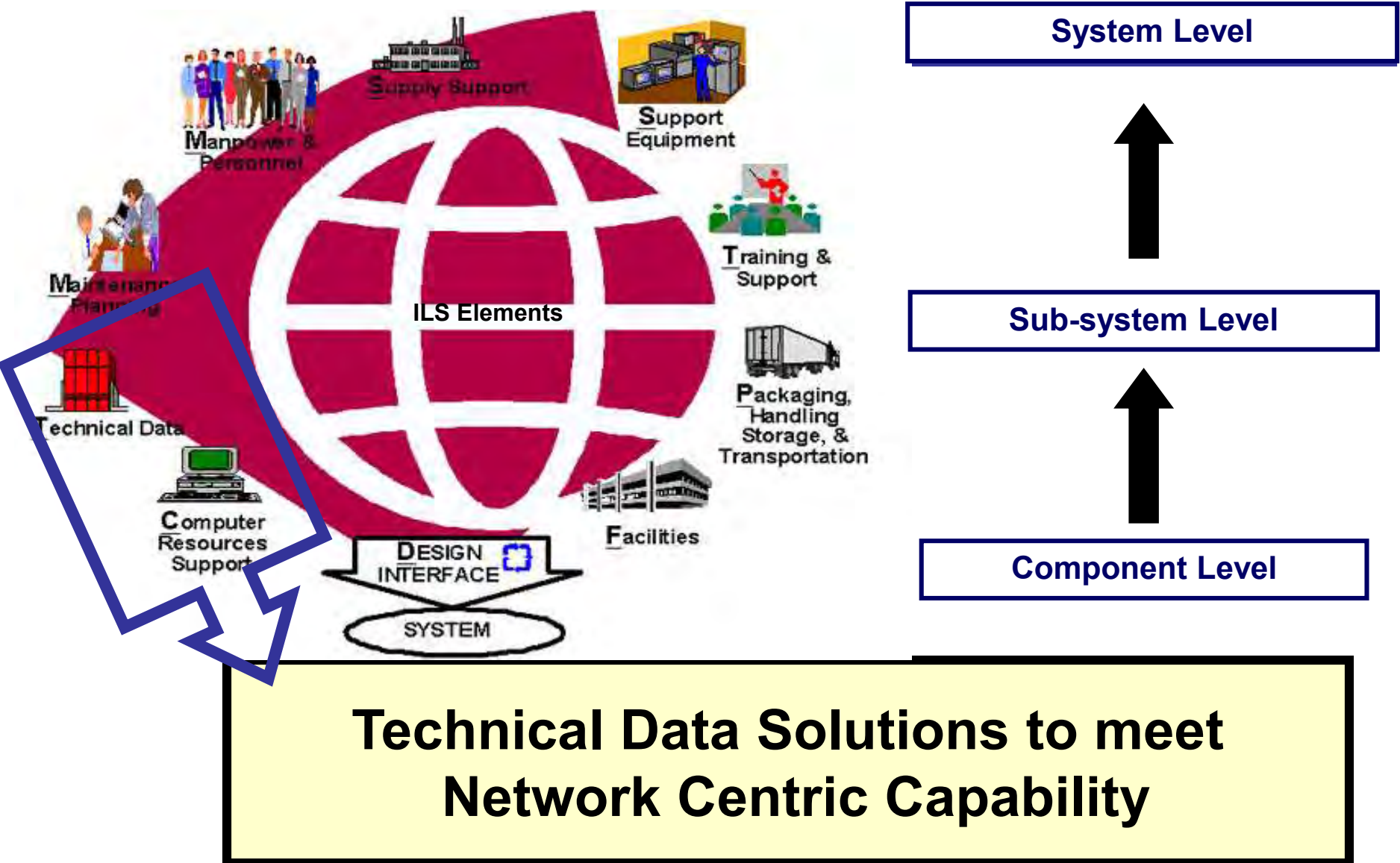


*Sustainment*

*Disposal*

*Visibility into cost/risk decisions across life cycle*

# PBL Applications



# Where Tech Data Must Fit with War Fighter Vision



+



+



## Network Centric Global Command & Control System

Global Joint Integrating Concept (JIC)

### GCCS Definition

Integrated Engagement Space

Critical operational capabilities identified

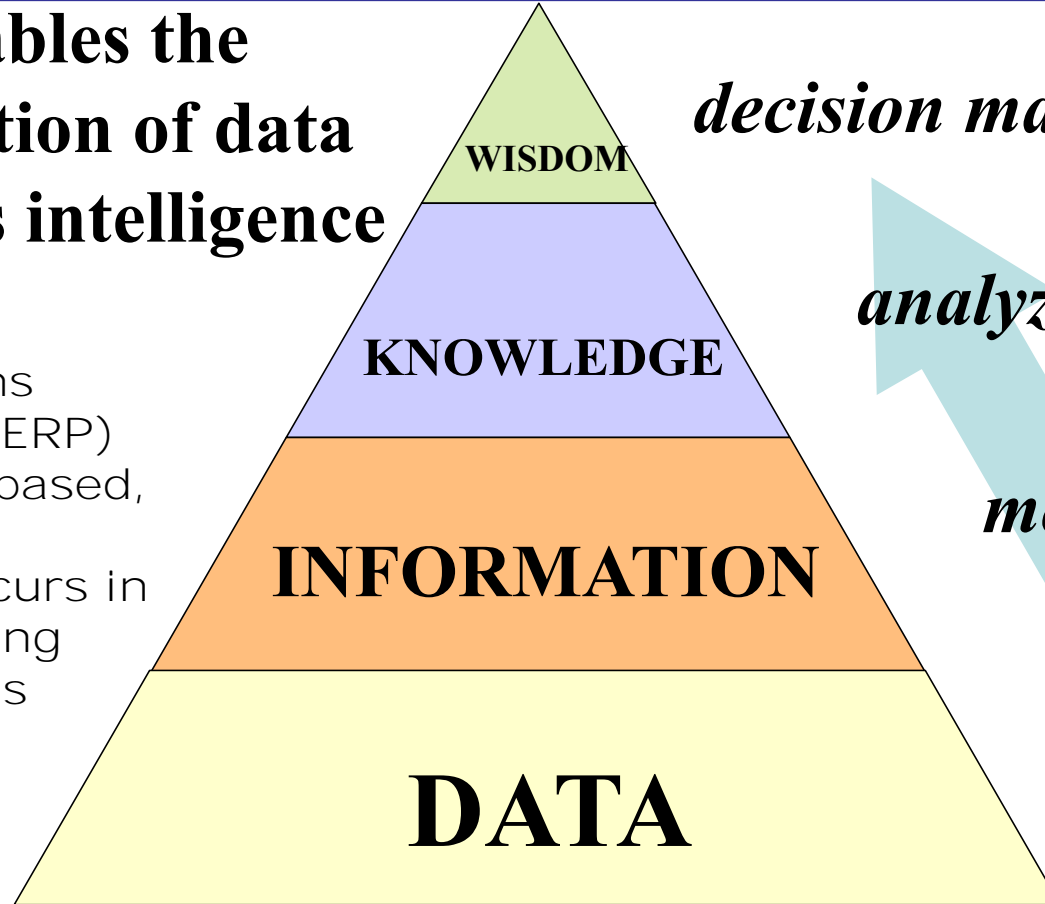
Global Combat Support System



# How does Advanced Planning and Scheduling Fit in the Information Pyramid?

**APS enables the transformation of data into business intelligence**

Business systems (legacy, MRPII, ERP) are transaction based, and much of the analysis that occurs in advanced planning and scheduling is above the transaction level of detail.



*decision making*

*analyzing*

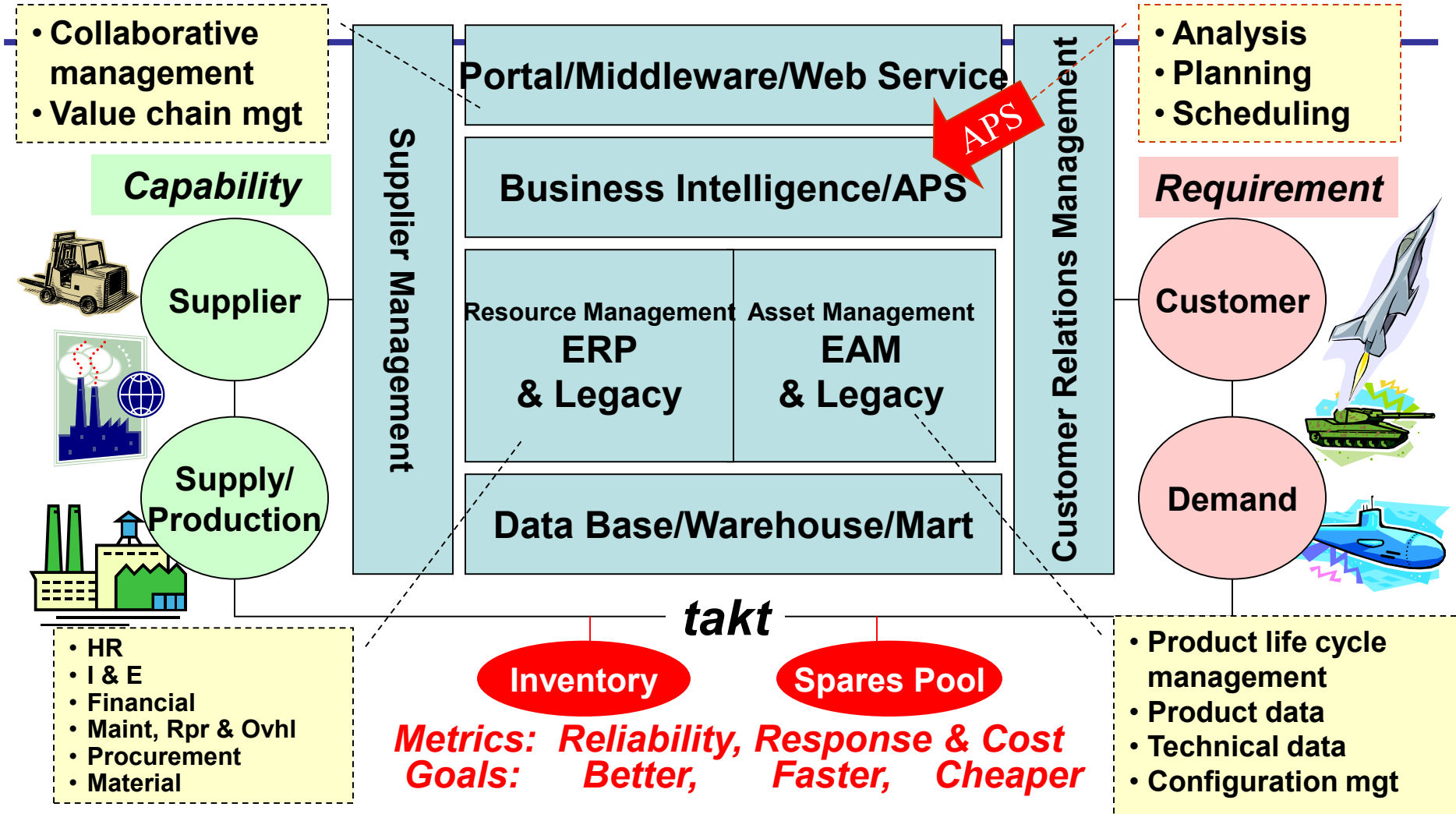
*modeling*

*compiling*

*How do I transform data to decision support quality?*



# How does Advanced Planning and Scheduling Fit in the Solution Set?



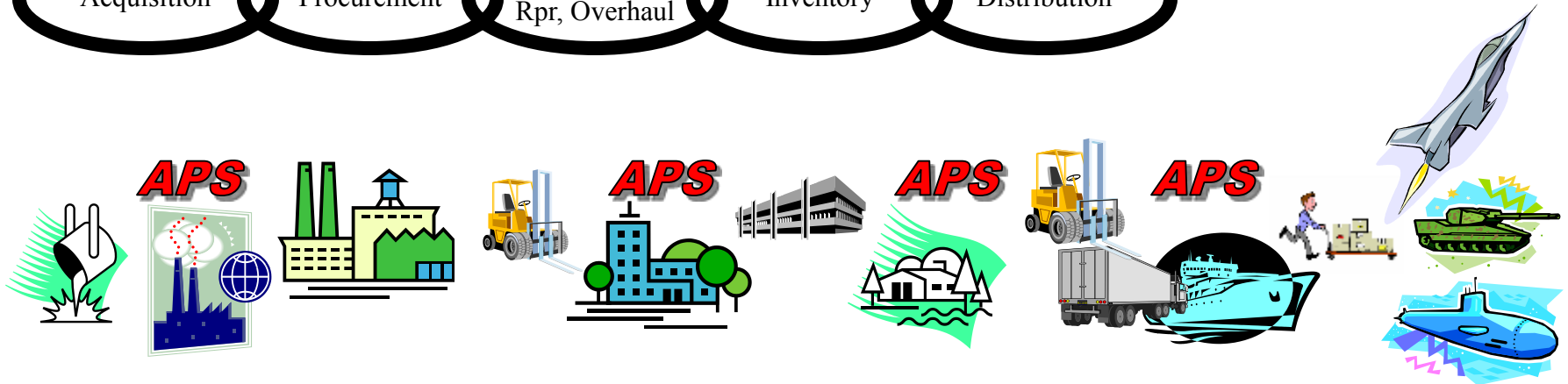
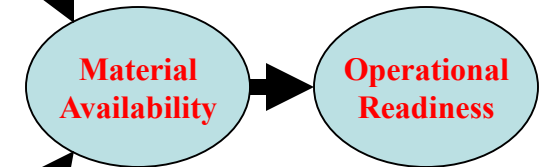
*Where does APS fit into my solution set framework?*

# APS Provides Business Intelligence to the Value Chain

## *Reliability Value Chain*



## *Response Value Chain*



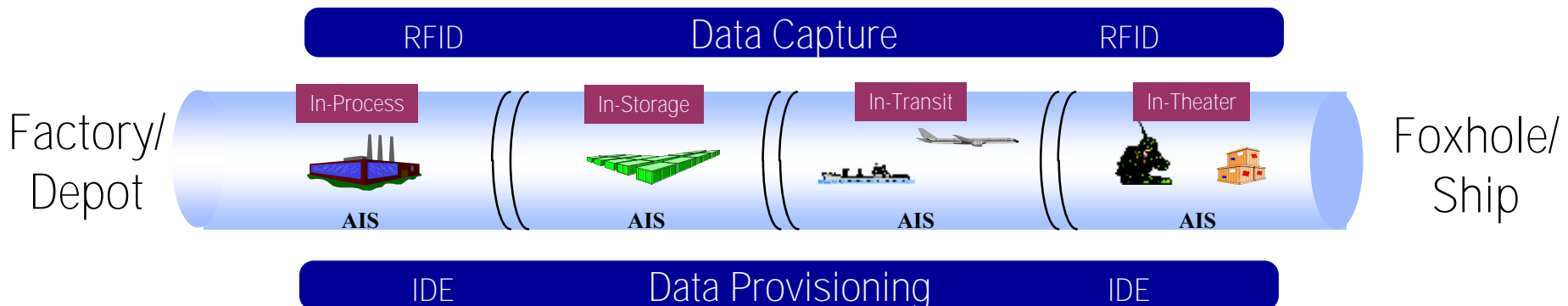
*How does APS relate to the Material Readiness Value Chain?*

# The Impact of IDE

**As JTAV is replaced by IDE AV, users, customers, and process owners will be provided timely and accurate information on the location, movement, status, and identity of units, personnel, equipment and supplies**

**This facilitates the capability to act upon that information to improve overall performance of DoD's logistics practices**

## ***“Sense and Respond” Logistics***

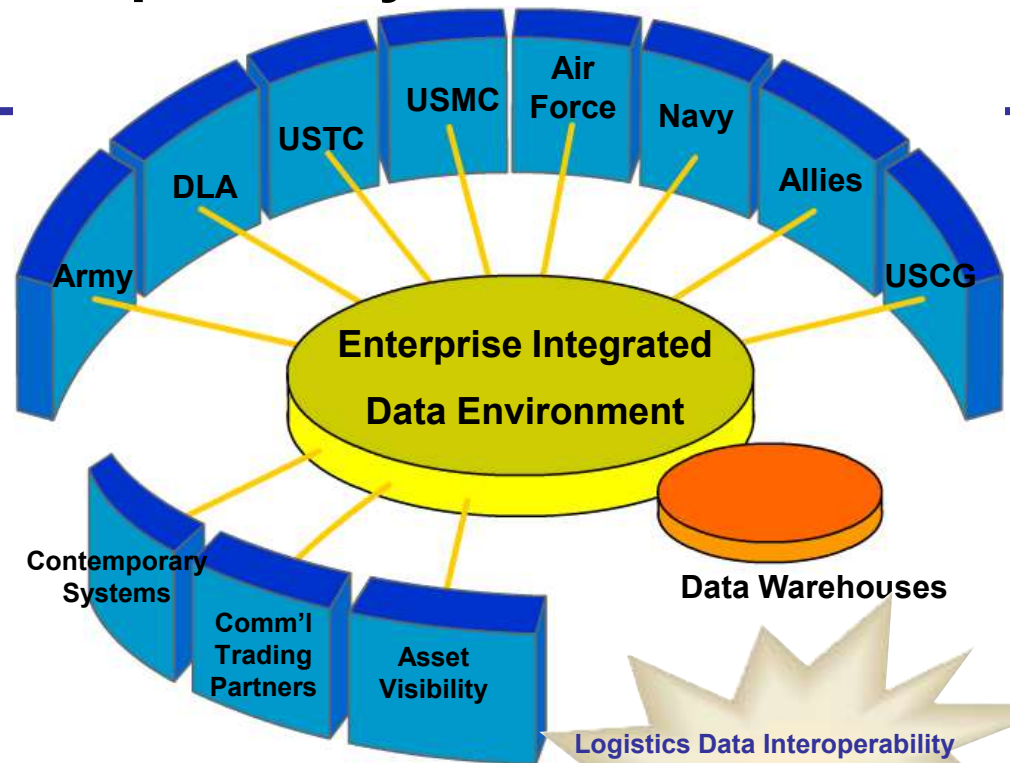




# How Else Does IDE Contribute to Asset Visibility and Overall Interoperability?

## Vision

The DOD Logistics Enterprise is executing practices, processes, applications, and decision support in an integrated logistics data environment, thereby achieving logistics data interoperability within a Net-Centric Community of Interest (COI)



## TODAY

- Stovepipe Systems
- High Cost
- Limited Data Interoperability



## TOMORROW

- Eliminate stovepipes
- Lower costs (reduced interfaces)
- Enable system-wide interoperability

# **Tasking from PPP Tiger Team**

---

- **Establish a Technical Data Subgroup to define a road ahead - Work with AIA - Begin Jan 05, report out 60 days thereafter - Opportunity Areas Identified**
  - **Technical Publications**
  - **Product Data Management**
  - **Professional Development**
  - **Technology Development**

# Tech Data Areas of Opportunity

---

- I. **Technical Publications:** Expedite transition from paper to interactive electronic format
- II. **Product Data Management (PDM):** Foster early integration of acquisition and sustainment data management systems into a “life cycle” system to improve reliability and decrease logistics footprint

# Tech Data Areas of Opportunity

---

- III. Professional Development:** Ensure both developers and users of tech data understand their roles in contributing to sustained material readiness of systems
- IV. Technology Development:** Enable the inclusion of new technology initiatives into the tech data system

# Implementation of S1000D

---

- **New and Modified Weapon Systems**
- **Legacy Data**
- **Understanding End-User Needs**
- **Service Boundary Conditions**
- **Achieve Network Centric Logistics**
- **Sustainment of Data Systems**
- **Digital Technical Data Capability**

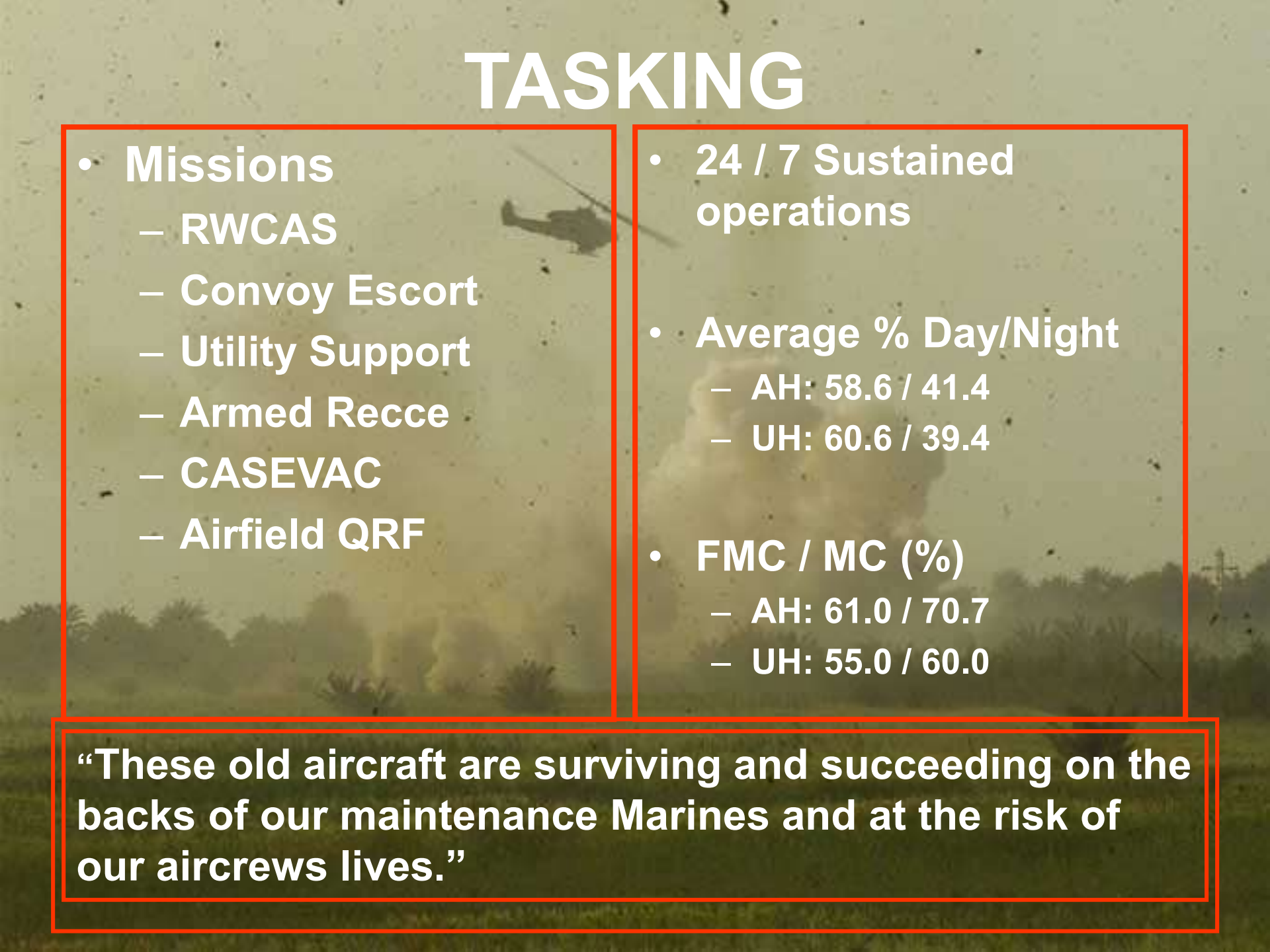
# Tasking for Maturing S1000D

---

## **Service / Industry / International Teams**

- Complete Business Rules
- Identify Needs
- Identify Pilot to move toward Network Center Operations

# TASKING

- 
- Missions
    - RWCAS
    - Convoy Escort
    - Utility Support
    - Armed Recce
    - CASEVAC
    - Airfield QRF
  - 24 / 7 Sustained operations
  - Average % Day/Night
    - AH: 58.6 / 41.4
    - UH: 60.6 / 39.4
  - FMC / MC (%)
    - AH: 61.0 / 70.7
    - UH: 55.0 / 60.0

**“These old aircraft are surviving and succeeding on the backs of our maintenance Marines and at the risk of our aircrews lives.”**



# *Defense Acquisition Policy Working Group*

*The DoD Acquisition Guidebook  
12 June 2003*



# DoD Acquisition Guidebook

---

## Objective

- **Revise and Complete Electronic DoD Acquisition Guidebook by September 2004**
- **Electronically Link the Guidebook to Policy Documents (DAU)**

## Criteria

- **This will be a Guide NOT A POLICY Document !!**
- **Explain, will not require**
  - **What and how vice shall and will**
- **Except when...(driven by 5000 policy)**
- **Relationship to other Guides and other Chapters**

# Overview of the Defense Acquisition Guidebook (11 Chapters)

---

- Chapter 1, *Department of Defense Decision Support Systems*, an overview of the Defense Department's decision support systems.
- Chapter 2, *Defense Acquisition Program Goals and Strategy*, acquisition program goals and the topics the program manager should consider in developing a strategy for the acquisition program.
- Chapter 3, *Affordability and Life-Cycle Resource Estimates*, acquisition program affordability and resource estimation.
- Chapter 4, *Systems Engineering and Integrated System Design*, system design, and the systems engineering processes that aid the program manager in designing an integrated system to balance capability,
- Chapter 5, *Life-Cycle Logistics*, provides the program manager with a description of Life-Cycle Logistics and its application throughout the system life cycle, from concept to disposal.

**Chapters 4 & 5 are strongly linked**

# Overview of the Defense Acquisition Guidebook (*Chapters 6-11*)

---

- Chapter 6, *Human Systems Integration*, addresses the human systems elements of the systems engineering process.
- Chapter 7, *Networks and Information Integration*, network-centric strategy to transform DoD warfighting, and intelligence capabilities.
- Chapter 8, *Intelligence, Counterintelligence, and Security Support*, responsibilities regarding the prevention of inadvertent technology transfer, and guidance for the protection of those technologies.
- Chapter 9, *Integrated Test and Evaluation*, integrated test and evaluation strategy to assess operational effectiveness and suitability.
- Chapter 10, *Decisions, Assessments, and Periodic Reporting*, program manager and Milestone Decision Authority oversight responsibilities.
- Chapter 11, *Program Management Activities*, activities and decisions required of the program manager, not discussed in earlier chapters.

# ***5000 Guidebook Overview***

---

- *Acquisition professionals should use this Guidebook to perform their management responsibilities.*
- *Each chapter is designed to improve understanding of the acquisition process and ensure knowledge of the statutory and regulatory requirements associated with the process.*
- *The Guidebook is more an electronic reference system than a “book”.*
- *Hyperlinks let you electronically jump to related info.*
- *Some links take you to external references, such as United States Code, or other formal DoD publications.*

**<http://AKSS.DAU.MIL/DAG/>**

# Total Life Cycle Systems Management (TLCSM)

[5.1.1]

## Life Cycle Logistics (LCL)

[5.1.2]

LCL in  
Systems Engineering  
(SE)

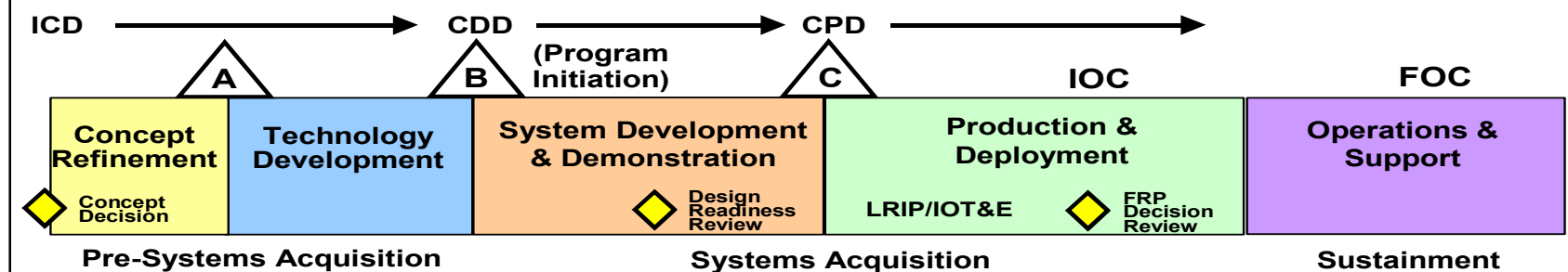
[5.2]

Performance Based  
Logistics  
(PBL)

[5.3]

### JCIDS

[5.4]



Under TLCSM the PM is responsible for Life Cycle Logistics (LCL), emphasizing LCL in systems engineering and implementing product support through Performance Based Logistics (PBL).

# Discussion Topics

---

- How can we accelerate adoption of international standards to support net-centric operations and logistics?
- What is the appropriate role for industry and professional societies in standards adoption?
- Are current standards efforts sufficient to achieve net-centric operations and life cycle management?
- How can we better synchronize standards efforts with Allies?

***Will application of S1000D help DoD achieve  
Net Centric Focused logistics?  
Are there other alternatives?***

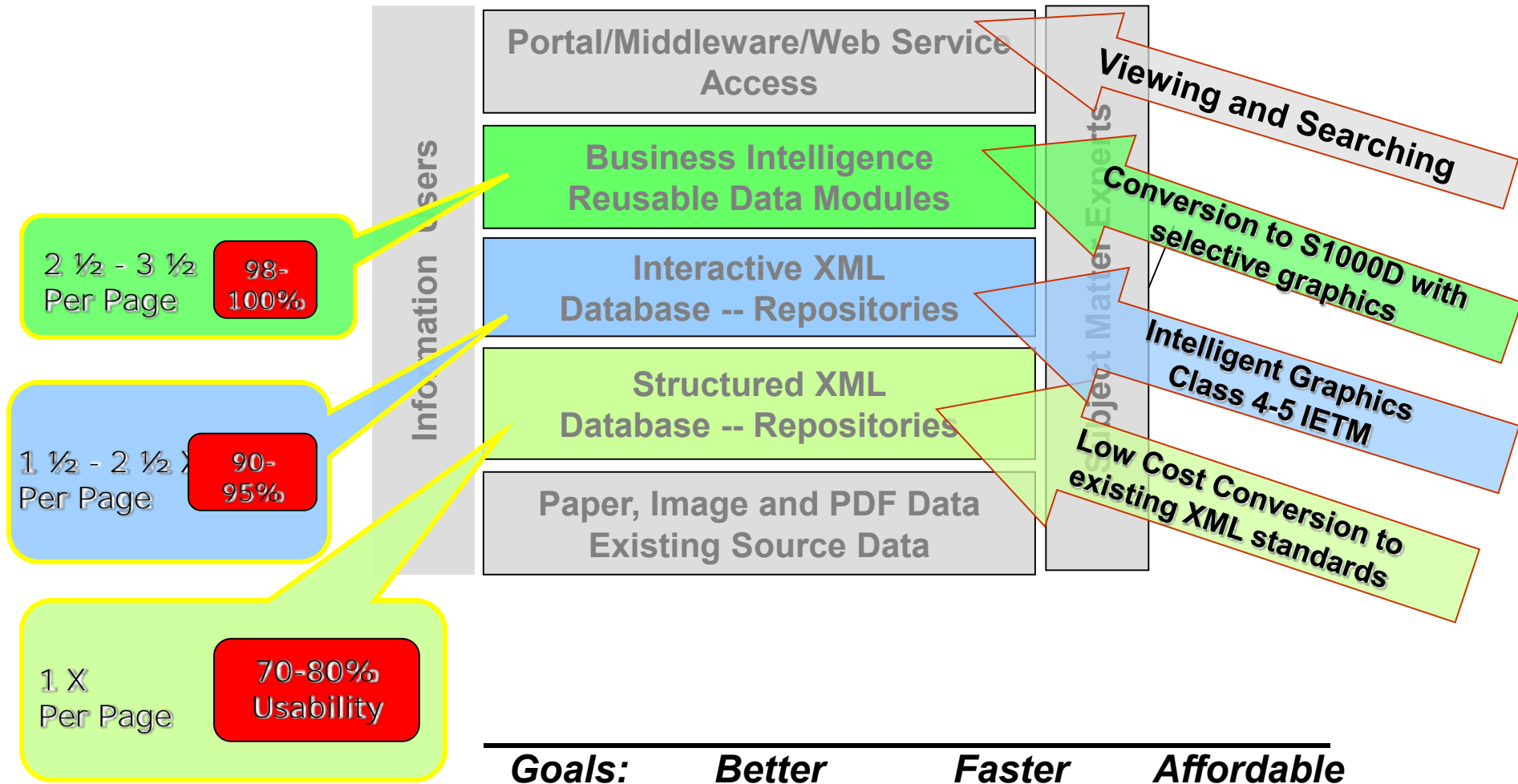
# Summary

---

- ***Government and Industry must work together to achieve this objective***
  - ***Framework has been established***
  - ***Performance based products***
  - ***Challenge to implement, must be cost effective***
  - ***Change is hard, but we owe it to the Warfighters to succeed***

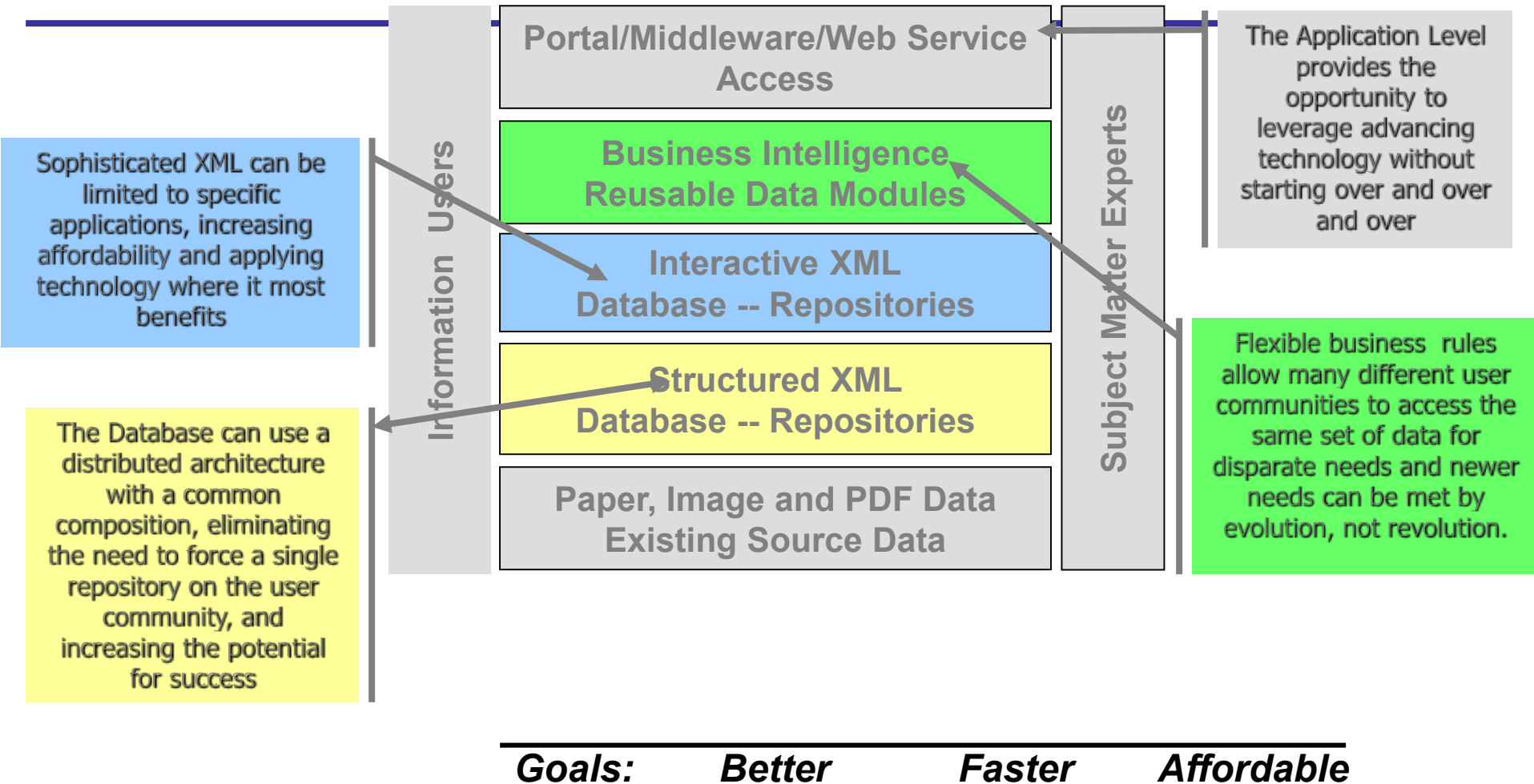
*Meeting Warfighter needs Around the Clock, Around the Globe.*

# Potential Tech Data Solution Set





# Potential Tech Data Solution Set



# Where is CM and DM in DODD 5000.1

Presented 2-4 March 2005  
Dr. Jay Billings





# What is Dodd 5000.1

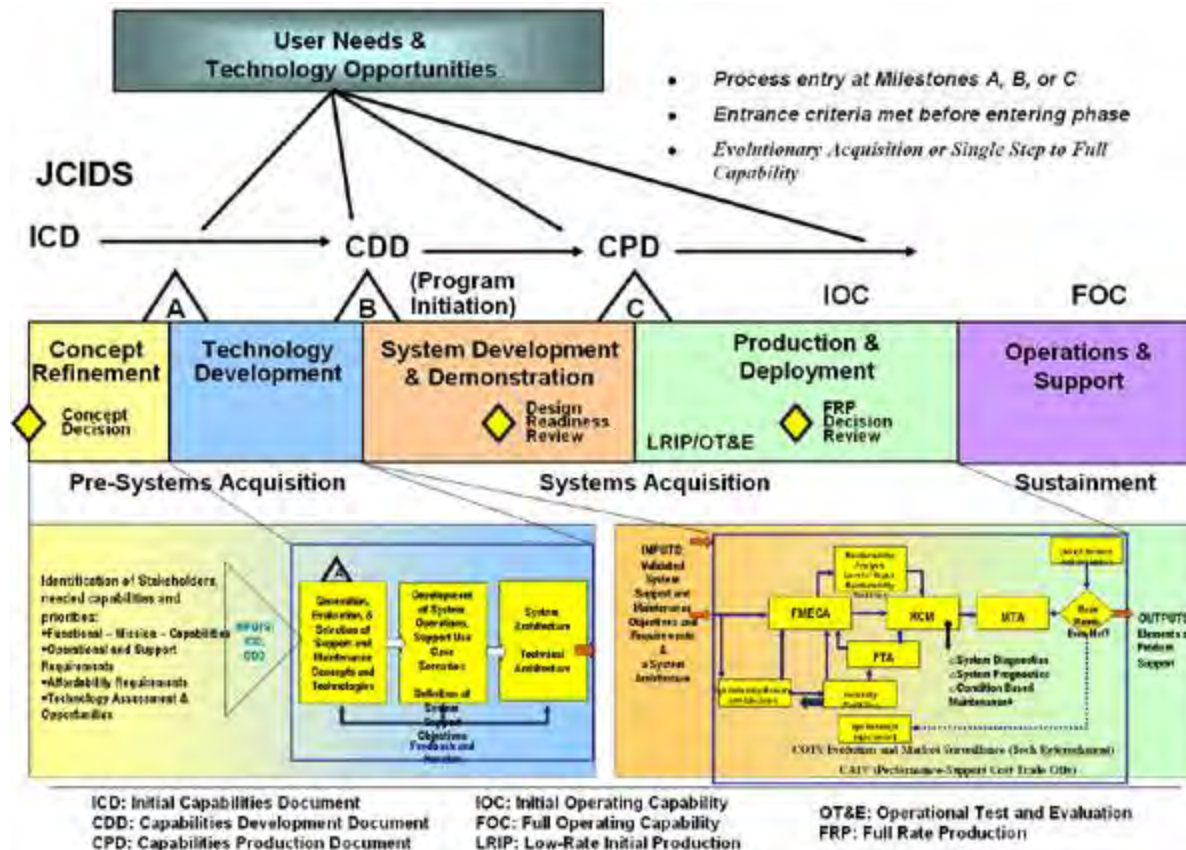
- The Federal Government uses a “gated decision” or milestone approach to management of large acquisitions
  - OMB Circular A-109
  - DoDD 5000.1
- Key elements are
  - Single point of authority and responsibility
  - Decisions made at major life cycle milestones
  - There are **technical** and **budgetary** milestones
    - Technical = feasible
    - Budgetary = affordable



## What is the overall DODD Life Cycle Management Approach?

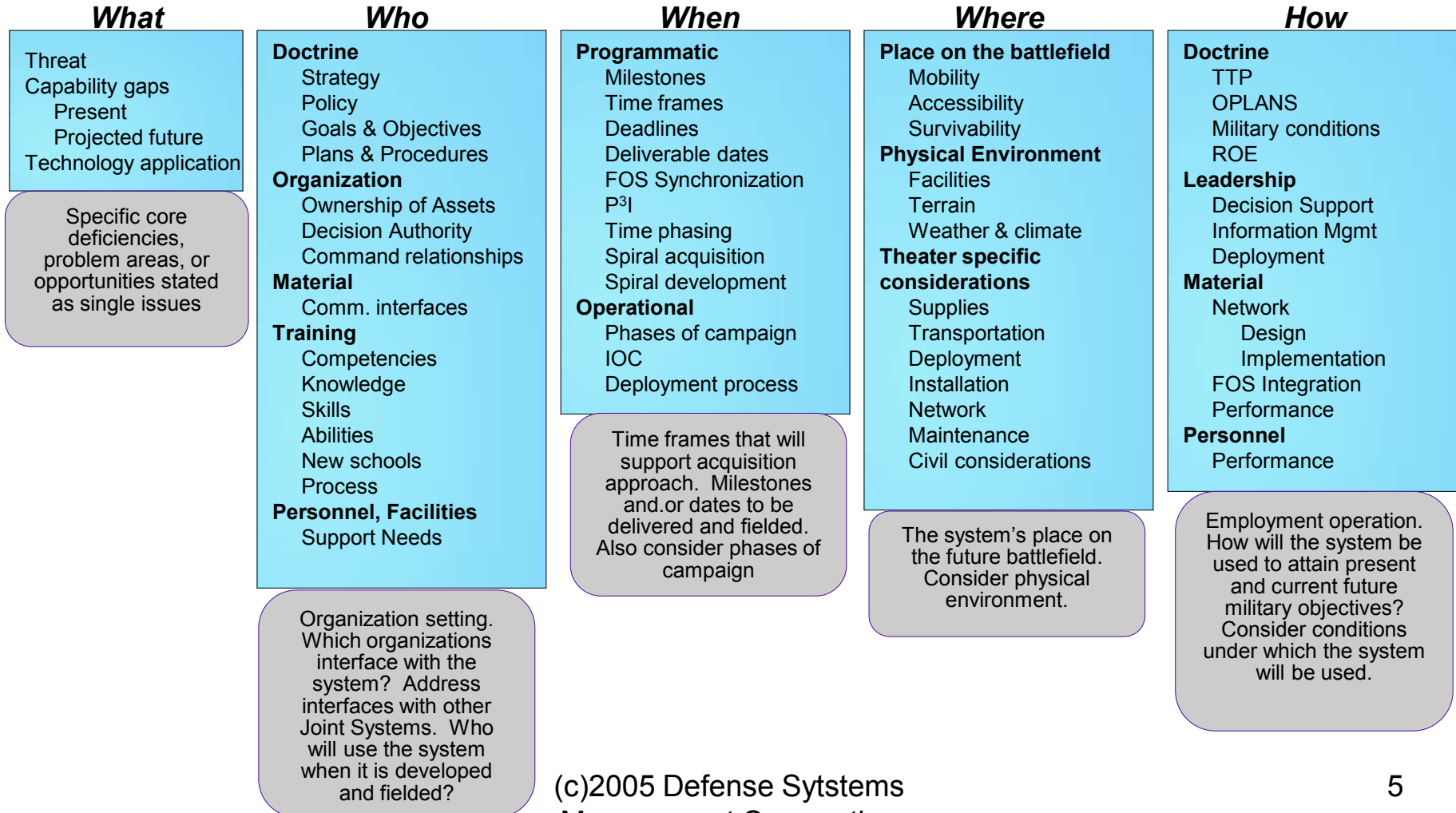
- The Defense Acquisition System exists to manage the Nation's investments in technologies, programs, and product support necessary to achieve the National Security Strategy and support the United States Armed Forces.

# Overall View

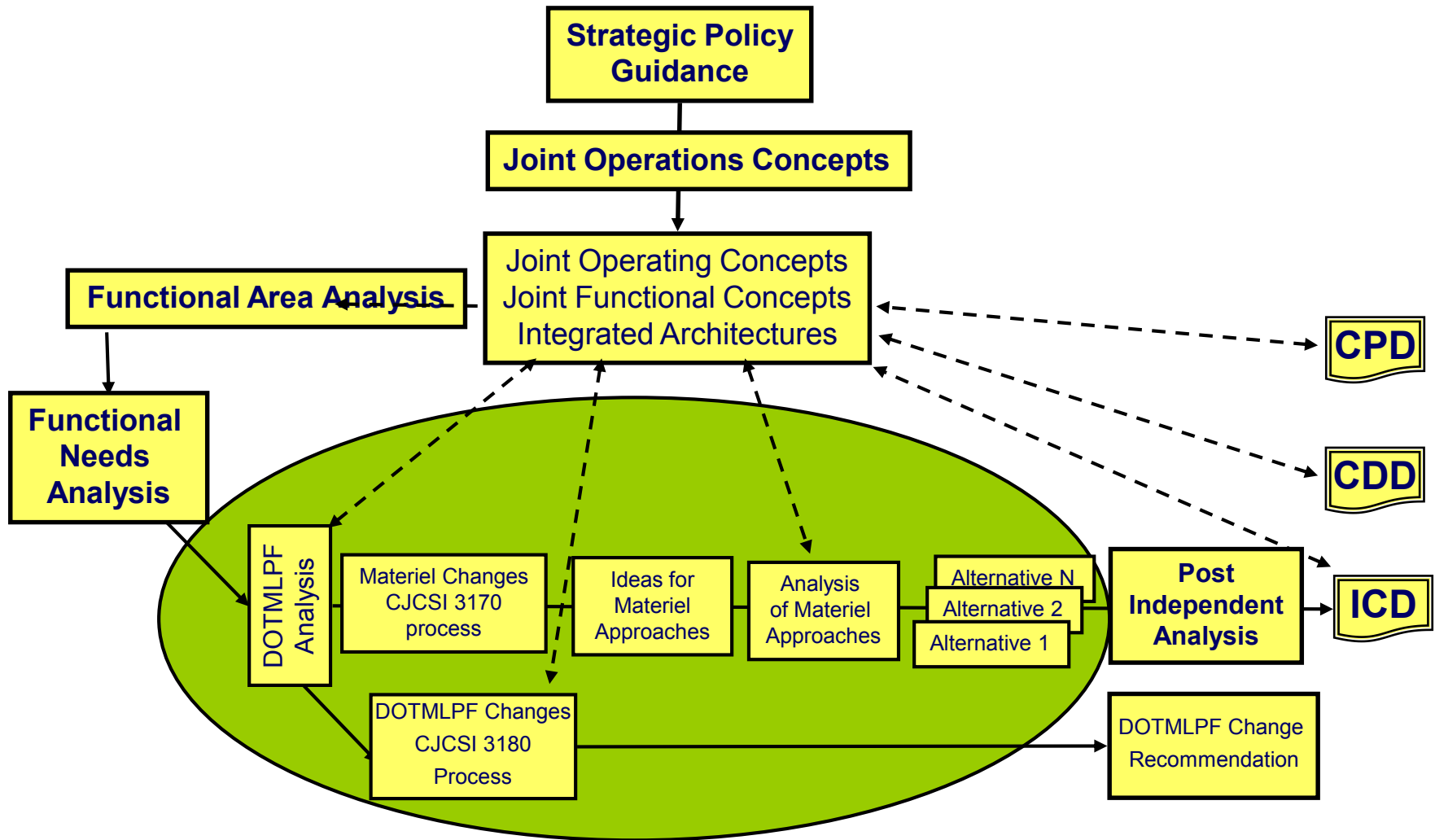


# Full Spectrum Analysis

## W<sup>4</sup>H Mode



# JCI DS Analysis



Functional Solution Analysis

Management Corporation

# Functional Capabilities Boards

- **Responsibilities**

- Ensure new capabilities are conceived and developed in joint warfighting context
- Ensure JCIDS proposals are consistent with integrated joint force
- Validate Joint Impact proposals
- Organize, analyze & prioritize capabilities proposals
- Oversee development and update of Functional Concept(s)
- Ensure integrated architectures (as available) reflect functional area

- **Status**

- **5 Chartered by JROC:**
  - **Command & Control (JFCOM);**
  - **Battlespace Awareness (J2);**
  - **Force Application (J8);**
  - **Focused Logistics (J4)**
  - **Protection (J8)**

***More Efficient Use of Scarce Department Resources***



# JCI DS Documents

- Capability Development Document (CDD)
  - **Replaces ORD at Milestone B**
  - Identifies operational performance attributes of proposed system
  - System specific, applies to single increment (in an evolutionary program)
  - Results from Technology Development and supports Milestone B
- Initial Capabilities Document (ICD)
  - **Replaces MNS**
  - Identifies a capability gap or other deficiency
  - Describes evaluation of DOTMLPF approaches
  - Support Analysis of Alternatives (AoA), Concept Refinement and Milestone A
  - Not updated once approved
- Updated or rewritten for subsequent increments

# JCIDS Documents (cont'd)

- Capability Production Document (CPD)
  - **Replaces ORD at Milestone C and FRPDR**
  - Identifies production attributes for a single increment of a program
  - Prepared during System Development and Demonstration
  - Rewritten for each increment in an evolutionary program
- Capstone Requirements Document (CRD)
  - **No Near Term Change**
  - Describes overarching thresholds/goals and standards in functional areas
  - Useful for family-of-systems or system-of-systems approaches
  - Developed only at JROC direction
  - Eventually will be replaced by integrated architectures

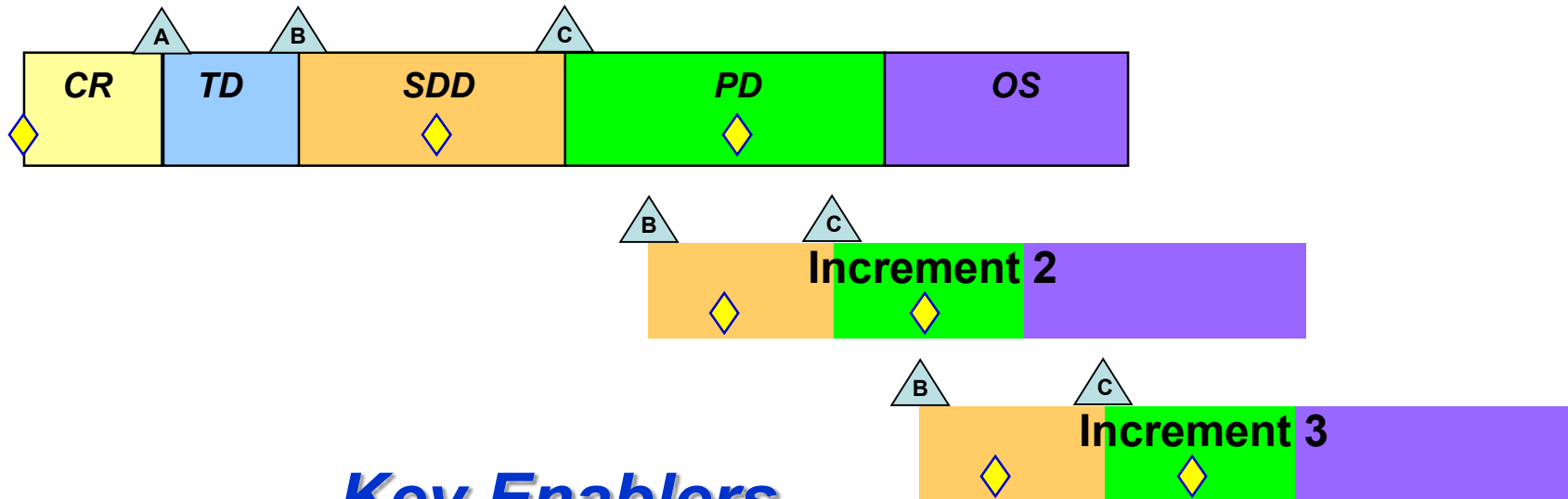
## Increased Flexibility

- **PM determines what information is required to satisfy regulatory requirements**
- **MDA may tailor (with some exceptions) regulatory information requirements**
- **MDA resolves issues regarding Guidebook expectations**

***The Opportunity to Be Innovative***



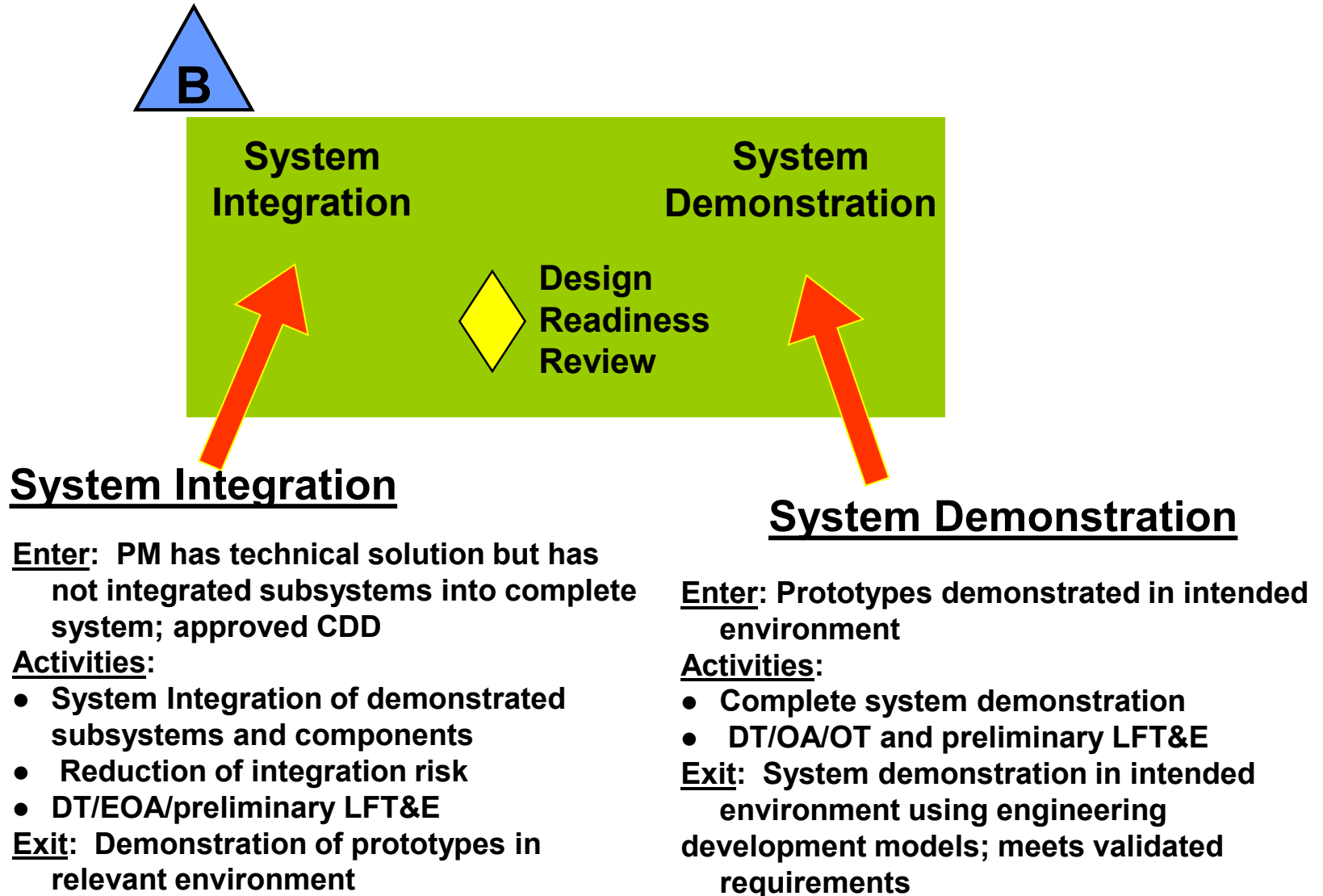
# Evolutionary Approach



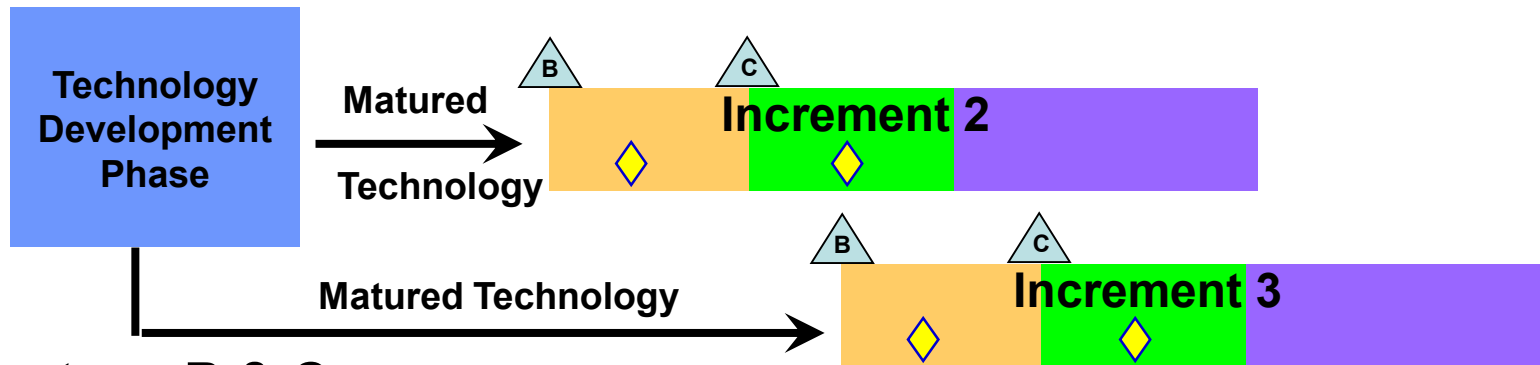
## **Key Enablers**

- Time-Phased Requirements
- A Modular Open Systems Approach to facilitate Technology Insertion
- Evolutionary Sustainment Strategies
- T&E Consistent with Evolutionary Approach
- Full Funding

# System Development & Demonstration



# Each EA Increment Must Have...

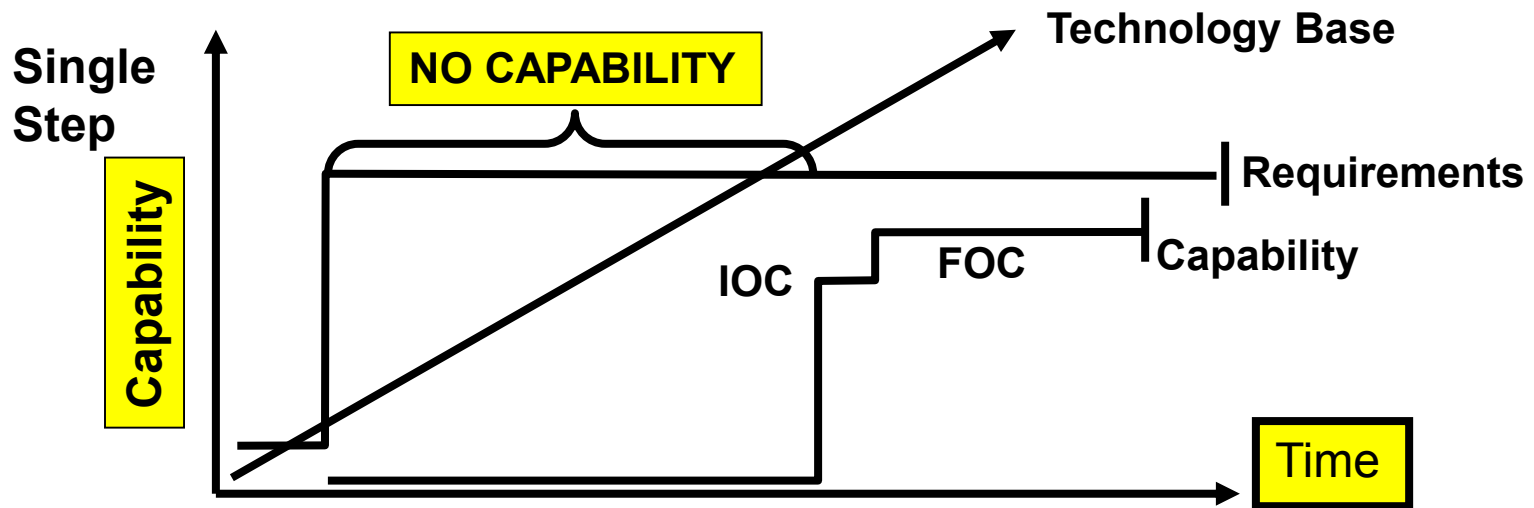


## • Milestone B & C

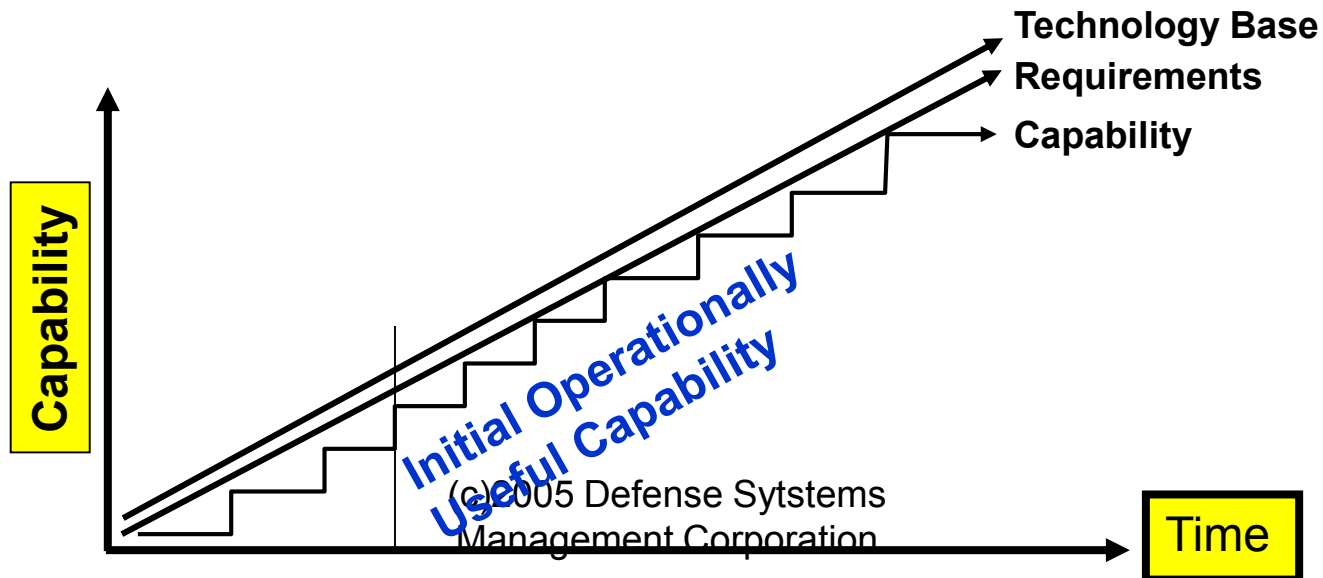
- Capabilities Development & Production Document (CDD/CPD )
- Performance, Cost and Schedule Goals (Acquisition Program Baseline)
- Operational and Live Fire Testing (If Required)
- Compliance with Acquisition Oversight Requirements
  - Acquisition Strategy that reflects consideration of:
    - Logistics Planning;
    - Manpower, Personnel and Training;
    - Environmental and Security Factors;
    - Protection of Critical Program Information;
    - Spectrum Management
    - Other information tailored to the conditions of the program

***Increments are Related, but Separate Acquisitions***

# Single Step & Evolutionary Approaches



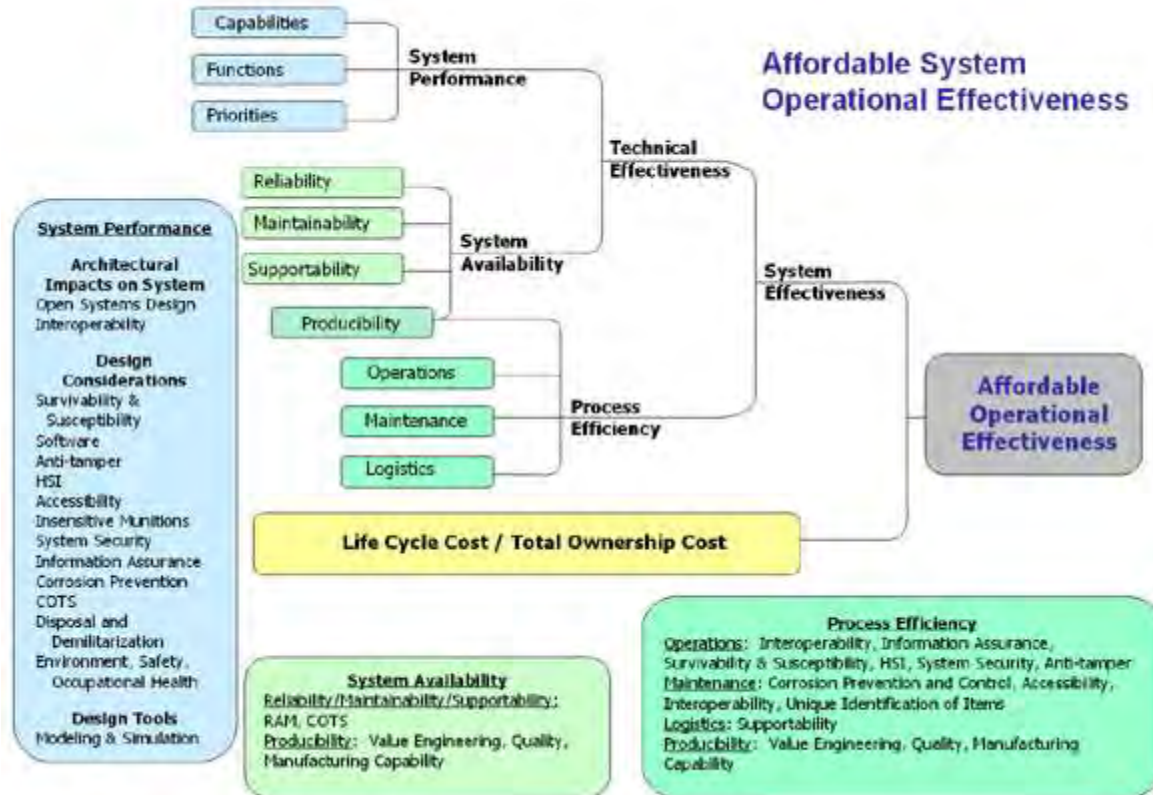
## Evolutionary



(c) 2005 Defense Systems  
Management Corporation



# Where do CM and DM appear?





The DoDD described system  
Conflicts with Easy CM/DM

- **Time-Phased Requirements**
- **A Modular Open Systems Approach to facilitate Technology Insertion**
- **Evolutionary Sustainment Strategies**
- **T&E Consistent with Evolutionary Approach**
- **Full Funding**
- **INSIDE CHANGE**
- **INSIDE CHANGE**
- **INSIDE CHANGE**
- **OUTSIDE CHANGE**
- **NEVER HAPPENS**



## Where is CM in DoDD 5000.1?

- DoD 4120.24-M, the Defense Standardization Program (DSP)  
Policies and Procedures, there are only two classes of standards and specifications to be considered: those that may be used with no restrictions and those documents requiring waiver prior to application.
- Defense Standardization Program Policies and Procedures Paragraph C3.8.2. of DoD 4120.24-M lists nine types of documents that may be used in development contracts. Of particular interest are three military document types: **standard practices, interface standards, and defense standards.**



CM and DM are in Dodd 5000.1, but are subsets of other Systems Management Topics

- Technical Management
- Risk Management
- Interface Management



## Standards

- *ANSI/EIA 649A, Configuration Management*, on the [GEIA website](#) (Click on STANDARDS);
- *ISO 10007, Quality Management - Guidelines for Configuration Management*;
- *EIA 836, Configuration Management Data Exchange and Interoperability*, located on the [GEIA website](#) (Click on STANDARDS); and
- [MIL-HDBK-61A](#), *Military Handbook, Configuration Management Guidance*



- ISO/IEC 15288, *Systems Engineering-System Life Cycle Processes*
- ANSI/EIA 632, *Processes for Engineering a System*
- IEEE 1220, *Application and Management of the Systems Engineering Process*
- EIA 731, *Systems Engineering Capability Model*
- CMMI SWE/SE/IPPD/SS, *Capability Maturity Model-Integration for Software Engineering, Systems Engineering, Integrated Product and Process Development and Supplier Sourcing*
-



- **4.6.2.Handbooks and Guides**
- [Guidance for the Use of Robust Engineering in Air Force Acquisition Programs](#)
- [Navy Systems Engineering Guide](#)
- INCOSE Handbook
- [MIL-HDB-61, Configuration Management](#)
- [MIL-HDBK 881, Work Breakdown Structure](#)
- [MIL-HDBK 1785, Systems Security Engineering](#)
- [NASA SE Handbook](#)
- [DSMC Systems Engineering Fundamentals](#)
- [DAU Risk Management Handbook](#)
- [Product Support for the 21st Century: A Program Manager's Guide to Buying Performance](#)
- [Designing and Assessing Supportability in DoD Weapon Systems: A Guide to Increased Reliability and Reduced Logistics Footprint](#)
- [DoD Template for Application of Total Life Cycle Systems Management \(TLCSM\) and Performance Based Logistics \(PBL\) In the Weapon System Life Cycle](#)
- [DoD Guide for Uniquely Identifying Items](#)
- The Reliability Analysis Center is a DoD Information Analysis Center, a Center of Excellence, and a technical focal point for information, data, analysis, training and technical assistance in the engineering fields of Reliability, Maintainability, Supportability, and Quality. Their web site is <http://rac.alionscience.com/>
- ISO/IEC TR 19760, *Systems Engineering – A guide for the application of ISO/IEC 15288 (System Life Cycle Processes)*, First Edition, 2003-11-15



Places where Standards CM and DM should be found

- Acquisition Strategy
- Product Support Strategy
- Statutory, Policy and Guidance Factors
- Acquisition Program Baseline
- Test Evaluation Master Plan
- WBS





Places where Standards and  
CM and DM should be found

- DoD 5000.1 and DoDI 5000.2 may not mention CM and DM specifically, but they do require several documents that allow for the application of CM and DM.
- This application is subject to tailoring and may be deleted, or incorrectly included.



- Why should we include CM and DM in DoD major acquisitions?
  - Makes sense to do it
  - They are fundamental management tools for systems management and for engineering management.
- Why exclude CM and DM from DoD major acquisitions?



- Why exclude?
  - They are alleged to “cost money”
  - They cause system to lose flexibility by forcing discipline too early
  - They do not allow for quick changes to reflect
    - mission changes
    - requirements changes
    - technology changes
    - they show responsibility and support accountability.



- Why include?
  - Increases knowledge
  - Avoids restarts and duplicative efforts
  - Assigns responsibility and accountability



- Where it can be used
  - Analysis of alternatives ( Chapter 3 DoDI 5000.2)
  - System Engineering Plan (Chapter 4 DoDI 5000.2)
  - Test and Evaluation Master Plan (Chapter 9 DoDI 5000.2)



## Why CM and DM

- How can CM and DM be “sold”?
- One must describe the
  - Features--
  - Benefits--
  - Proof



## DM Standards

- [S1000D International Specification for Technical Publications Utilizing a Common Source Database;](#)
- [Data Management Community of Practice \(CoP\)](#), located on the Acquisition Community Connection on the DAU website;
- [DoD 5010.12-M](#), Procedures for the Acquisition and Management of Technical Data, May 1993;
- [DoD 5200.1-M](#) Acquisition System Protection Program, March 1994;
- GEIA-859, Consensus Standard for Data Management, located on the [GEIA website](#) (Click on STANDARDS). (Note: This document is currently being published.);
- [Intellectual Property: Navigating Through Commercial Waters, October 15, 2001,](#)
- ISO 10303, Standard for the Exchange of Product Model Data (STEP), website



## DoDI 5000.2 DM Requirements

- The applied systems engineering process requires *access* to data to facilitate decision making, but does not necessarily require *acquisition* of *all* data. The data management processes assist in decision-making. Data management processes reveal the proper data to be acquired or accessed. The decision to purchase data should be made when access to required data is not sufficient to provide for Life-cycle planning and system maintenance. The cost of data delivery should be a primary consideration. Other considerations include the following:
  - Data requirements for spare and repair parts;
  - Technical data needed for ordering and purchasing items for contingencies; and
  - Circumstances under which the data may evolve over time to more useful or updated data.





## DoDI 5000.2 DM Requirements

- **4.2.3.7.3.Data Storage** The program manager also has responsibility for addressing long-term storage and retrieval of data and associated program information - planning for digitizing continued need information, as appropriate and cost-effective. Such long-term planning and incremental digitization, as required, will assure that applicable data is available, preserved, and migrated to successive formats for future planning and use.



## DoDI 5000.2 DM Requirements

- **Key Logistics activities that must be completed before MS B:**
- · Preparation and/or assessment of sustainment planning and parameters in the
- Capabilities Development Document (CDD)
- · Description of the product support strategy as documented in the Acquisition
- Strategy (ASR)
- · Description of the appropriate logistics metrics, criteria, and funding
- requirements in the Acquisition Program Baseline (APB).
- · Description of the appropriate logistics considerations and test points in the Test
- and Evaluation Master Plan (TEMP)



## DoDI 5000.2 DM Requirements

- The following LCL 'drivers' should be considered in the Initial Capabilities Document :
- System Maintenance/Support Profiles and Use Case Scenarios (Support Capability Packages)
- Reliability and Maintenance Rates
- Support Environment and Locations for Support
- Support and Maintenance Effectiveness
- Duration of Support



## DoDI 5000.2 DM Requirements

- **Cost Analysis**
  - Lifecycle Cost Methodology
  - Models and Data
  - Cost Sensitivity and/or Risk Analysis
- **Cost-Effectiveness Comparisons**
  - Cost-Effectiveness Methodology
  - Displays or Presentation Formats
  - Criteria for Screening Alternatives
- **Organization and Management**
  - Study Team/Organization
  - AoA Review Process
  - Schedule



## Case 1: Requirements

What are the major CM and DM issues for a requirement for “germ/virus resistant clothing”

- CM

1

2

3

- DM

1

2

3



What should be in your proposal  
for the Germ/Virus Resistant Clothing?

- CM

1

2

3

- DM

1

2

3



What are good metrics to show that CM and DM is being used on a DoD Project/Program?

# CDM Certification and Apprentice Tutorial



**NDIA** Technical Information Division



# **CDM Certification and Apprentice Tutorial**

## **Introduction**

- ◆ **CDM Certification - Background**
  - ◆ **Milestones**
  - ◆ **The NDIA Process**
  - ◆ **Other NDIA Certification Activities**
  - ◆ **NDIA Program Strengths**
  - ◆ **Recertification Program**
  - ◆ **Conclusions**
- Questions?**

**Prepared by:**  
**Richard Thomas**  
**Tel: 719 689 5851**  
**E mail: [rctenterprises@aol.com](mailto:rctenterprises@aol.com)**

**Presented by:**  
**Charles Billingsley**

# CDM Certification and Apprentice Tutorial

## Background

- ◆ Certification initiated in 1990 by ADPA (the predecessor association to NDIA)
- ◆ Modeled after successful certification programs in medical professions, and other disciplines such as logistics, quality, contract management, etc.
- ◆ Common aspect among all viable programs is their insistence that high levels of professional competence result from two sources:

*Knowledge and Experience*

# CDM Certification and Apprentice Tutorial

## Background (Cont'd)

- ◆ Knowledge can be gained in several ways; formal education, seminars, self study, job assignments, on-the-job training, etc.

### HOWEVER

- ◆ Experience can only be gained by actual performance

# CDM Certification and Apprentice Tutorial

## Background (Cont'd)

This is why recognized and respected certification programs in any discipline require individuals to demonstrate their knowledge, and possess the needed experience to become certified. For example, to become board certified as a surgeon one must have performed successful surgery of the specified type for the required number of times; and separately demonstrate their knowledge.

# CDM Certification and Apprentice Tutorial

## Milestones

- ◆ 1990: ADPA sponsors Technical Information Division CM and DM certification
- ◆ 1990: Limited 'Grandfather' CM and DM Certification initiated, based on experience
- ◆ 1991 - 1995: Certification by examination offered separately in CM and DM disciplines at Manager and Specialist levels; exams based primarily on DoD methodology

# **CDM Certification and Apprentice Tutorial**

## **Milestones (Cont'd)**

- ◆ **1996: Separate CM and DM Certifications combined into one CDM Certification**
- ◆ **1996 on: Exams based on prevalent Industry, International and government standards; Exams modified to emphasize essay questions in addition to objective questions**
- ◆ **1997: ADPA/NSIA merge to become NDIA**
- ◆ **2000: NDIA International CDM Certification initiated with first exams in United Kingdom**

# CDM Certification and Apprentice Tutorial

## NDIA Process

- ◆ NDIA Certification requires that applicants meet the following requirements:  
(1) Pay fee; (2) Submit CDM experience resume; and (3) Demonstrate CDM knowledge on exam
- ◆ This process requires significant effort by the candidate
- ◆ Examination is not difficult, but; the CDM discipline is broad, and candidates need to prepare and apply themselves

# **CDM Certification and Apprentice Tutorial**

- ◆ **Following charts focus on CDM Certification; but also apply to the CDM Apprentice program**
- ◆ **The significant difference is that the Apprentice only requires a minimum level of experience**
- ◆ **The Apprentice exam is much easier even though the subject matter is the same**



# **CDM Certification and Apprentice Tutorial NDIA Process**

## **2005 Fee Structure**

- ◆ **Examination fee: \$250.00**
- ◆ **Required one year NDIA individual membership: \$30.00**
- ◆ **Examination retake fee (if needed): \$100.00 (Valid for 24 months from date of first exam)**

# CDM Certification and Apprentice Tutorial

## NDIA Process

## Provide CDM Experience Resume

## ◆ Requirements:

**Apprentice: about 1 Year CDM Experience**

## Specialist Certification: 5 Years CDM Experience

## Manager Certification: 10 Years CDM Experience

- ◆ Applicants document in a resume their combined CM and DM activities during various work assignments

- ◆ **Resume reviewed, and verified (as appropriate) by two Technical Information Division certified board members**

# CDM Certification and Apprentice Tutorial

## NDIA Process

### Demonstrating Knowledge: The Examination

- ◆ *Basic philosophy:* examination attempts to determine an individual's knowledge, Not their ability to memorize references
- ◆ Includes questions on hardware, software and many data management subjects
- ◆ Administered in four parts, each with defined subject matter
- ◆ Questions in essay and objective formats

# **CDM Certification and Apprentice Tutorial**

## **NDIA Process**

### **Demonstrating Knowledge: The Examination**

- ◆ **Exam envelope: 8:00 AM to 4:30 PM, with between parts and lunch breaks**
- ◆ **No reference materials may be used**
- ◆ **Administered only by TID Certified board members who are responsible for security and integrity of the examination**
- ◆ **Passing score: 70% (achieve 280 of the maximum 400 points)**

# CDM Certification and Apprentice Tutorial

## NDIA Process

### Demonstrating Knowledge: The Examination

- ◆ Scoring performed by *volunteer* Scoring Teams (6 or more NDIA certified individuals)
- ◆ Team has *complete scoring authority*, including the ability to 'throw-out' questions judged inappropriate or invalid
- ◆ Objective questions: Scored using the TID consensus scoring key
- ◆ Essay questions: Scored independently and subjectively by three team members with final score assigned by team lead

# **CDM Certification and Apprentice Tutorial**

## **NDIA Process**

### **The Certification Award**

- ◆ **Certifications are signed by NDIA Director of Operations, TID Chair, and TID Certification Section Chair**
- ◆ **NDIA Director of Operations congratulatory letter accompanies each certification**
- ◆ **Name of each person certified annually printed in *National Defense* magazine**
- ◆ **Name of all certified individuals entered in the 'Book of Honor' at NDIA HQ**

# CDM Certification and Apprentice Tutorial

## Other Certification Activities

### Certification/Apprentice Preparation Course

- ◆ A preparation course is presented annually at various conferences (GEIA, ACDM)
- ◆ Course also presented upon request by companies or groups of individuals
- ◆ Provided by NDIA because many applicants report *their organization has no training* designed to help prepare the staff for Certification or Apprentice

# **CDM Certification and Apprentice Tutorial Other Activities**

## **Promoting the NDIA CDM Certification and Apprentice Programs**

- ◆ **Publication of promotional documents  
Advertising in selected publications**
- ◆ **Certification and Apprentice Study Guides**
- ◆ **Examination schedules**
- ◆ **Briefing organizations and companies  
interested in the program**



# CDM Certification and Apprentice Tutorial

## Program Strengths

- ◆ NDIA Certification is widely recognized as the industry leader; and is the *single CDM certification* adhering to high standards maintained by other successful programs (i.e. maintaining the requirement that candidates must):
  - ◆ Meet established experience levels
  - ◆ *Successfully Demonstrate CDM knowledge* by passing the examination

# CDM Certification and Apprentice Tutorial

## Program Strengths (Cont'd)

Because of these standards;

- ◆ those who earn NDIA Certified Configuration and Data Manager (CCDM) or NDIA Certified Configuration and Data Specialist (CCDS) are recognized as professionals within the discipline.
- ◆ Those who earn NDIA CDM Apprentice level are recognized as serious individuals on their way toward CDM professional status when they have required experience to apply for Certification

# **CDM Certification and Apprentice Tutorial**

## **Program Strengths (Cont'd)**

- ◆ **NDIA Certification has been developed over time by hundreds of experienced and respected CDM professionals, many of whom continue to provide guidance and support**
- ◆ **The examination always reflects current trends in CDM, and is based on the most prevalently used industry, international, and government guidance documents**

# **CDM Certification and Apprentice Tutorial**

## **Program Strengths (Cont'd)**

- ◆ **Examination focus is on practical, real world CDM subjects using both objective and essay type questions**
- ◆ **No reference document memorization is needed (or recommended)**
- ◆ **Many exam questions may be successfully addressed based on an individual's CDM experience**

# CDM Certification and Apprentice Tutorial

## Recertification Program

- ◆ A 'Re-certification' program was initiated in January 2003; it provides a method to be recertified five years after the original certification, for the following reasons:
  - ◆ Rapidly changing CDM applications and guidance stds. require current knowledge
  - ◆ To enhance the quality of CDM participants by eliminating those who have chosen to leave active participation in the discipline

# **CDM Certification and Apprentice Tutorial**

## **Re-Certification Program (Cont'd)**

- ◆ **Re-certification may be applied for and accomplished by:**
  - ◆ **(1) Retaking the examination**  
**or**
  - ◆ **(2) Documenting the following:**
    - ◆ **Completing recognized CDM training courses**
    - ◆ **Conducting CDM training courses**
    - ◆ **Continuing activity in a CDM job**
    - ◆ **Participation in conferences with CDM focus**

# CDM Certification and Apprentice Tutorial

## Re-Certification Program (Cont'd)

- ◆ TID board members review and evaluate applications and submitted documentation
- ◆ Upon approval, a re-certification is issued valid for an additional five years
- ◆ There is an NDIA fee of \$200.00, if membership is current
- ◆ Those choosing not to be re-certified still retain their prior certification; however, it is considered a “non-current” certification

# **CDM Certification and Apprentice Tutorial**

## **Recertification Program (Cont'd)**

- ◆ **All NDIA certifications issued subsequent to 1 January 2003 have expiration dates five years from date of issue (date of exam)**
  - ◆ **Complete information is at: [ndia.org](http://ndia.org) (see Recertification Plan)**
- or contact**
- ◆ **Dick Thomas or any TID Board Member**



# **NDIA Certification/Apprentice Program Conclusions**

**Program success has surpassed expectations and resulted in the following:**

- ◆ **As of 1 January 2005, over 1500 CDM professionals have earned NDIA Certification, and 29 have earned NDIA CDM Apprentice status**
- ◆ **These NDIA Certified individuals provide a quality base within the discipline that enhances the CDM professional environment for all practitioners**

NDIA  
21st Annual National Logistics  
Conference

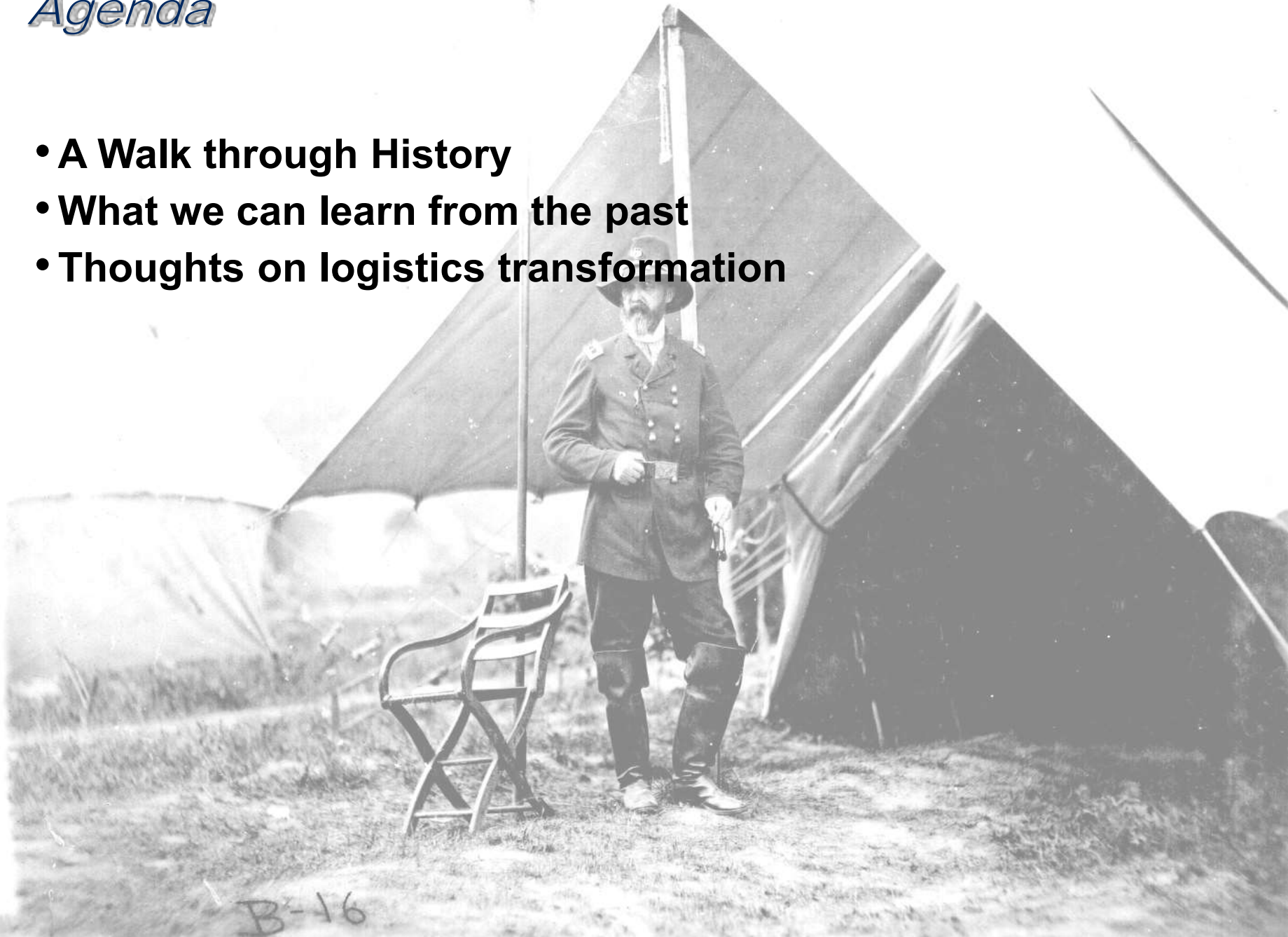
***Adapting Logistics Capabilities  
to National Security  
Requirements***

Industry Keynote  
LTG Peter Cuvillo, USA (Ret.)  
Vice President and Managing Director  
Lockheed Martin Focused Logistics Enterprise

1 March 2005

# *Agenda*

- **A Walk through History**
- **What we can learn from the past**
- **Thoughts on logistics transformation**





- **From the Greek word “logistikos”  
– meaning “skilled in calculating”**
- **Originally used in Roman and Byzantine times when there was a military administrative official with the title “Logists”.**
- **The word implied a skill in the sciences of mathematical computations.**



## **When US Logistics Started**

- By resolution in 1775 the Continental Congress provided for a staff to administer aspects of its military establishment. On 16 June legislation was passed authorizing an Adjutant General, a Commissary General of Stores and Provisions, Quartermaster General, among others
- The First TRANSCOM: The greatest responsibility of the quartermaster general was to provide transportation but also had other duties related to the procurement and distribution of supplies





## **The beginning of the Defense Industrial Base**

- 1639 ~ manufacture of gunpowder
  - Massachusetts Bay colony
- 1647 ~ Cannon cast in Lynn, Mass
  - and Bridgewater, Conn in 1648
- 1680 ~ powder mill at Dorchester
- After British prohibited in 1774 the export of firearms to the colonies, Massachusetts established a public arms factory.
  - Virginia established a plant at Rappahannock Forge near Fredericksburg
  - 1775, Pennsylvania established a gunlock factory in Philadelphia. In the winter of 1775-76 Pennsylvania arms makers manufactured more than 4,000 muskets.







## **The Defense Industrial Base Grows with both Public Arsenals and Private Industry**

- **1812, Eli Whitney accepts contract for the manufacture of muskets in Conn and New York but wanted a 20 year period to amortize the cost of tooling that was necessary to improve reliability**
- **Production of muskets at the national armories increased steadily from 1808 to 1812, at Springfield and Harper's Ferry**
- **1840-1850s ~ defense contracting evolves**

**Defense Industrial Base continues to grow with a number of Private Industry suppliers providing rifles, pistols and swords.**

**Because the US Government is virtually the only customer the practice of renewable long term contracts is successfully implemented for those providers of quality products offered at competitive prices. ~ Whitney of Conn.; Pomeroy of Pittsfield Mass; Derringer of Phila.**



**Revolution.** General Washington continually handicapped by lack of munitions, supplies and transportation. The situation was improved by aid from France

**Civil War.** The Confederate army was hindered and never succeeded in overcoming its supply deficiencies even with some small arms and fabric from the UK and support from France late in the war.

**WW I.** The US Army could not have played the decisive role without weapons, munitions, supplies and transportation furnished by allies.

**OIF.** US forces were reliant on coalition and friendly allied support for water, fruits and vegetables and batteries, among other things.



# LOGISTICS and Warfighting



**Logistics**



Equivalence

**Strategy**



**Tactics**



# *Historical Perspective, Revolutionary War*



- **Burgoyne's Surrender at Saratoga.**

- Breakdown of his transportation
- Failure of procurement in Canada
- Failure of procurement en route
- Delays that gave the Americans time to reorganize



- What Borgoyne considered essential in numbers of men and artillery and baggage proved to be only a burden against success.
- In moving heavy ordinance and stores he lost one of the most important elements in warfare - timing
- For the Americans, lines of communication remained open, resupply generally was adequate, and troops were sufficiently well re-equipped

# *Historical Perspective, Civil War Logistics and Missed Opportunities*

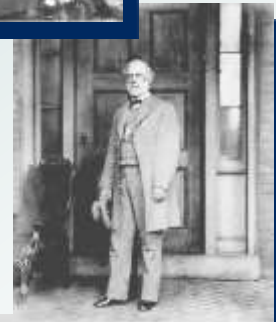


**1<sup>st</sup> Manassas:** If Confederate forces had logistics support they could have pursued Federal Forces all the way to Washington.

**Peninsular Campaign,** Spring 1862, McClellan moved 110,000 men and supplies employing 400 steamers and sailing vessels, 14,500 animals and 44 batteries of artillery.

**Antietam:** Logistics provides an opportunity, not exploited ~ because of an extraordinary use of the railroads for resupply, McClellan was provided the means to renew the attack and gain a decisive victory over Lee's forces. In Sept 1862, it could have been over.

**Gettysburg:** The Union Victory at Gettysburg can be ascribed to an immense logistical advantage through use of railroads to bring up supplies and men to General Meade. The federal side had enough supplies to continue the battle for days. Even without the Confederate's "tactical errors" they could not have been able to sustain the campaign for a decisive victory over the Union Army.





# *Historical Perspective:* *To what extent have things changed?*



## **Quote from the Army Chief of Military History about the North Africa and Mediterranean Campaign in 1942**

**“A situation as shocking to the War Department as it was embarrassing to the Services of Supply in the European theater developed when it became necessary to reorder large quantities of Class II {clothing and weapons} and IV {construction and fortification} supplies that were known to be already in the United Kingdom but which, because of faulty marking and lack of proper records, could not be found in time to equip the forces preparing to sail from Britain.**

**It hardly helped matters when requisitions arrived without proper identification and when timely status of supply reports were lacking.”**



# *The Classical Principles of Logistics Continue to Apply*

- First with the most
- Equivalence
- Materiel Precedence
- Economy
- Flexibility and Dispersion
- Feasibility
- Timing
- Unity of Command
- Knowledge through Information





**“A backlog of hundreds of pallets and containers of materiel at various distribution points due to transportation constraints and inadequate asset visibility.”**

**“A discrepancy of \$1.2 billion between the amount of materiel shipped to Army activities in the theater of operations and the amount of materiel that those activities acknowledged they received.”**

**“A potential cost to DOD of millions of dollars for late fees on leased containers or replacement of DOD-owned containers due to distribution backlogs or losses.”**

**“The cannibalization of vehicles and potential reduction of equipment readiness due to the unavailability of parts that either were not in DOD’s inventory or could not be located because of inadequate asset visibility.”**



**“The duplication of many requisitions and circumvention of the supply system as a result of inadequate asset visibility.”**

**The accumulation at the theater distribution center in Kuwait of hundreds of pallets, containers, and boxes of excess supplies and equipment that were shipped from units redeploying from Iraq without required content descriptions and shipping documentation.**

**“DOD did not have adequate visibility over all equipment and supplies transported to, within, and from the theater of operations in support of OIF.”**

**“DOD did not have a sufficient distribution capability in the theater to effectively manage and transport the large amount of supplies and equipment deployed during OIF.”**



**“The failure to effectively apply lessons learned from Operations Desert Shield and Desert Storm and other military operations may have contributed to the logistics support problems encountered during OIF.”**

**“At times there were shortages of some spares or repair parts needed by deployed forces.**

**“Army pre-positioned equipment used for OIF was not adequately configured to match unit needs.**





**“DOD contractors used for logistics support during OIF were not always effective.**

**“Physical security at ports and other distribution points in the theater was not always adequate to protect assets from being lost or taken by unauthorized personnel.**

A faded background image showing three soldiers in full combat gear, including helmets and sunglasses, moving through a large opening in a stone wall. The soldier in the center is holding a rifle. The image is semi-transparent, allowing the text to be overlaid clearly.

## **For Logistics the Battle is the Pay-off.**

**Beyond the procurement of military supplies and equipment there remain the closely related activities of storage, distribution and transportation to get materiel into the hands of the troops and to all the battle areas\***

**\*The Sinews of War, Army Logistics 1775-1953, Office of the Chief of Military History, United States Army**



**The most elegant element of logistics transformation is the design of logistics solutions into the weapon system itself**

- Designing systems for maintenance free operation**
- Use of autonomic solutions employing prognostics and health management**
- Different ways of thinking about managing obsolescence through technology refresh strategies**
- Performance Based Logistics Business strategies, for system level total sustainment, where long term contracts and tailored incentives force lean principles and continuous improvement in system level availability and TOC reduction**

## *Concluding Comments*

- \* **Elegance of engineering solutions**
- \* **Courage to employ new business models**
- \* **Integration of logistics into the overall command and control so that we truly achieve equivalence as the classical principle states:**

***Strategy, tactics and logistics,  
as history has proven,  
is what wins wars.***



# ***A Historical Perspective to Drive the Future***



**“The line between disorder and order lies in logistics...”**

***...Sun Tzu***

**“My logisticians are a humorless lot ... they know if my campaign fails, they are the first ones I will slay.”**

***...Alexander***

**“There is nothing more common than to find considerations of supply affecting the strategic lines of a campaign and a war.”**

***...Carl von Clausewitz***

**“Logistics comprises the means and arrangements which work out the plans of strategy and tactics. Strategy decides where to act; logistics brings the troops to this point.”**

***...Jomini: *Precis de l' Art de la Guerre*. (1838)***

**“Gentlemen, the officer who doesn't know his communications and supply as well as his tactics is totally useless.”**

***...Gen. George S. Patton, USA***

**“The war has been variously termed a war of production and a war of machines. Whatever else it is, so far as the United States is concerned, it is a war of logistics.”**

***...Fleet ADM Ernest J. King, in a 1946 report to the Secretary of the Navy***

**“Bitter experience in war has taught the maxim that the art of war is the art of the logistically feasible.”**

***...ADM Hyman Rickover, USN***

**“Forget logistics, you lose.”**

***...Lt. Gen. Fredrick Franks, USA, 7th Corps Commander, Desert Storm***



**LOCKHEED MARTIN**



# **NDIA Technical Information Division Symposium**

## **Integration of Systems Engineering & Supportability**

**3 March 2005**

**Joe Grosson**

**Executive Director, Focused Logistics Enterprise  
& Corp. Director of Logistics**

# Overview of the LM Sustainment Business Base

*C2 of DoD  
Distribution &  
Transportation*

*Delivery of Warfighter  
Capability ~ Present  
LM Business  
Base (\$5B+)*

**C4ISR  
COCOM  
Control of  
Warfighter Capability**

**Logistics Command & Control**  
e.g. GCSS, GTN, AF Knowledge System,  
AF NIPRNET/SIPRNET Portal, ILS-S, FIRST,  
Maint.Training, ERP Study, Navy Log EA,  
AF Enterprise COTS Integration, C2 Constellation, MARCOR AL

**DOD Enterprise System Implementation**  
e.g. DLA BSM, JEDMICS, DMS, JLAOTD

**Performance Based Logistics, Prime Vendor,  
TSSR, SCM, System Support and Maintenance**

**MS2**

- MK 41
- AEGIS
- ARCI
- A/C Tires
- Trident Nav
- Q70 CDVD
- BSY-2 POSS
- Va.Class NPES

**M&FC**

- HIMARS
- JAVELIN
- F-14 LANTIRN
- Apache TADS/PVNS

**STS**

- CASS
- MEP

**ALC**

- A/C Maint./Repair
- Aviation SCM

**LMSI**

- H-60 TTT
- H-60 Avionics
- Merlin

**Aero**

- JSF
- F-16
- F-117 TSPR

**LMSM**

- Log. Support Services
- WIN T Log

**ISS**

- AF OSI Maintenance
- USMC Auto Log

**Space**

- THAAD
- TRIDENT MSL

**New Acq. Prog.  
Pursuits**

- MMA
- LCS
- MUOS

# Total systems support from design to disposal (D2D)



**End State: Integration of Systems Engineering & Supportability  
For the life of the system**



## Planning, Concept Development, Business Model

Requirements Modeling and Simulation

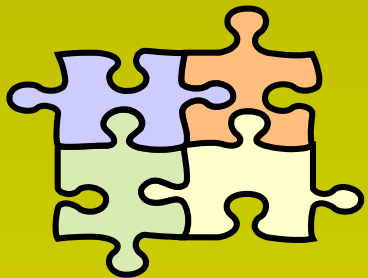
Sustainment Strategy

Concept of Operations

Business Model and Performance Metrics

Public Partnerships & Subcontracting

Capital Investment in Sustainment Infrastructure



## Engineering & Design For:

Reliability

Maintainability

Affordability

Manufacture & Production

Testability

Minimum footprint  
Power, space,  
fuel, Weight,  
moment

Security and Exploitation

Human Factors

Obsolescence & Tech Refresh

System Interface Integration

## Functional Activities

IT Infrastructure

SCM/ITV/TAV

Training, Training Facilities, simulators

Repair & Return

Maintenance  
•Hardware, Software  
•CSS

Tech Doc

PDM

Parts Inventory

Depot Operations

Manpower: Operations, Maintenance, Training

Transportation/Distribution

Customer Support/CRM

Prog. Mgmt & Control

Support Equipment

## External to Program Boundary

### Cross Program Implications

- Common Items, e.g Processors, Power supplies
- Software, Applications &Middleware
- Engineering Devel. & Test Facilities
- Simulation
- Tools & Processes
- Shared ERP
- Shared Training Facilities
- IR&D & Investment
- Standard Materials

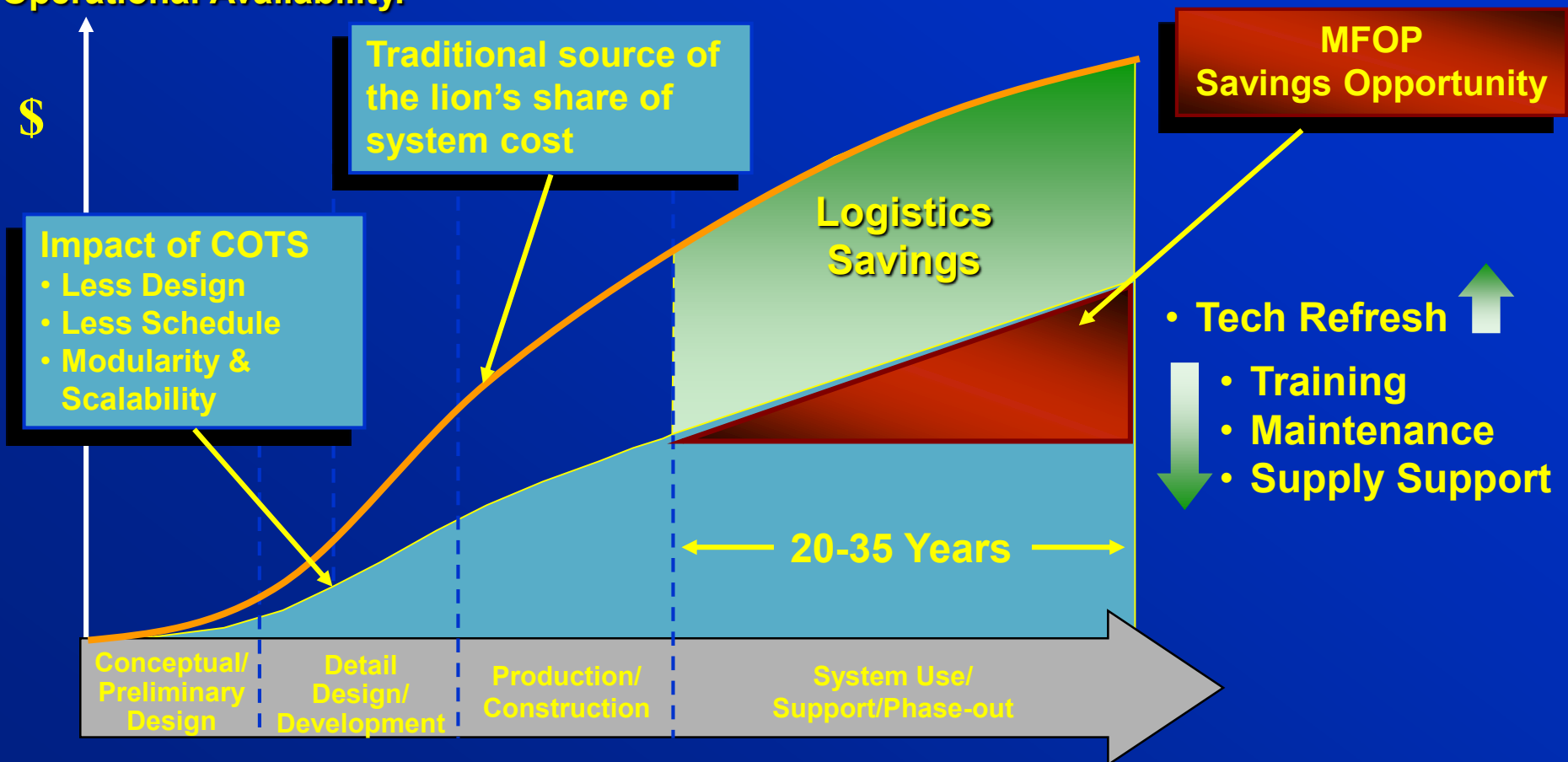
T&E

Disposal & Reuse

**In the Trade-Space Domain, ALL Elements are Mutually Inclusive**

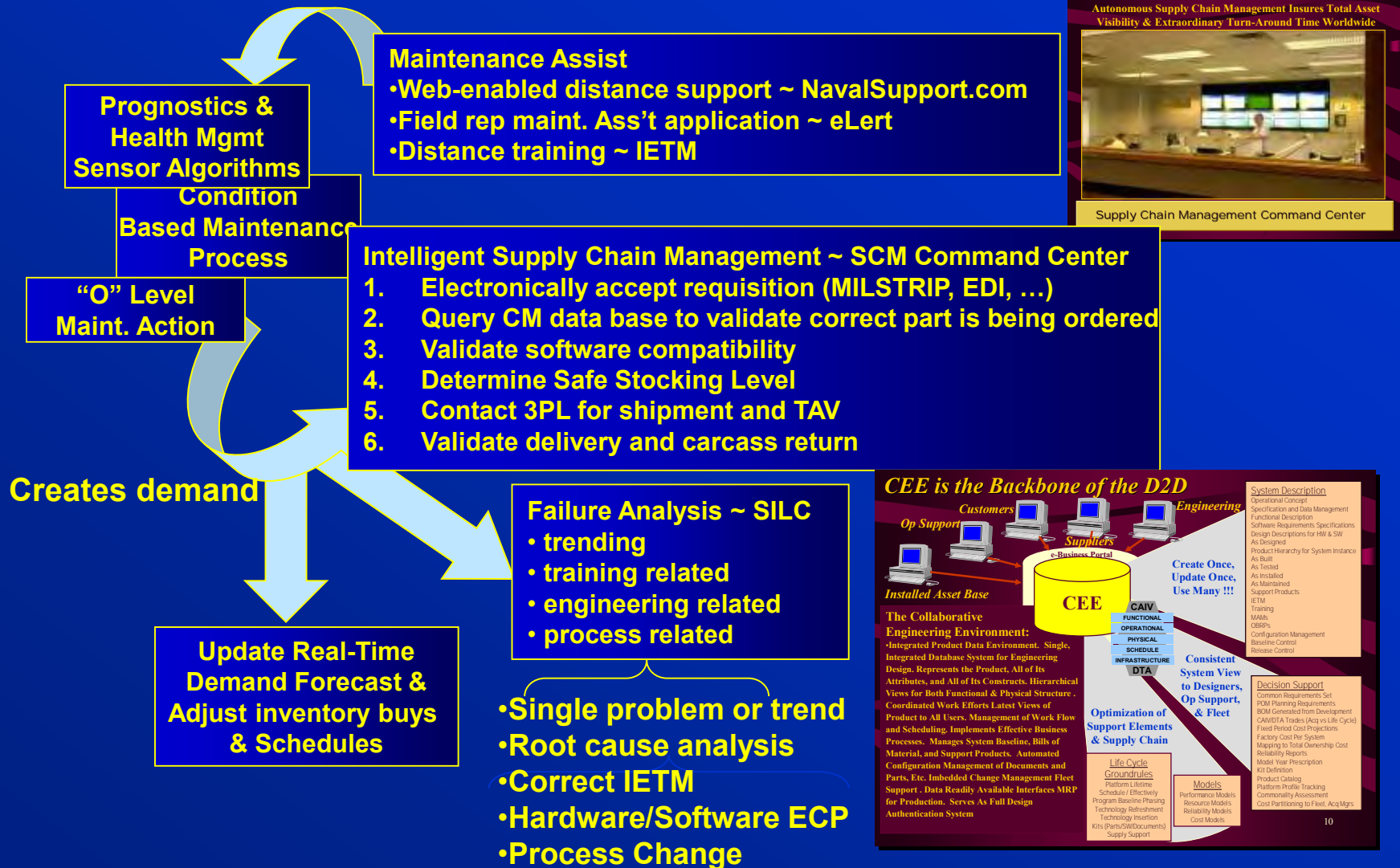
# Maintenance Free Operating Period (MFOP) - Wedge of Opportunity

• **MFOP** - Eliminates maintenance and the need for associated support while aligning logistics actions with preplanned COTS Technology Refresh and Insertion for improved Operational Availability.



**Cumulative Life-Cycle Costs  
Incurred by the Program/System**

# Design to Disposal™ Intelligent Logistics Architecture ~ Functional Flow



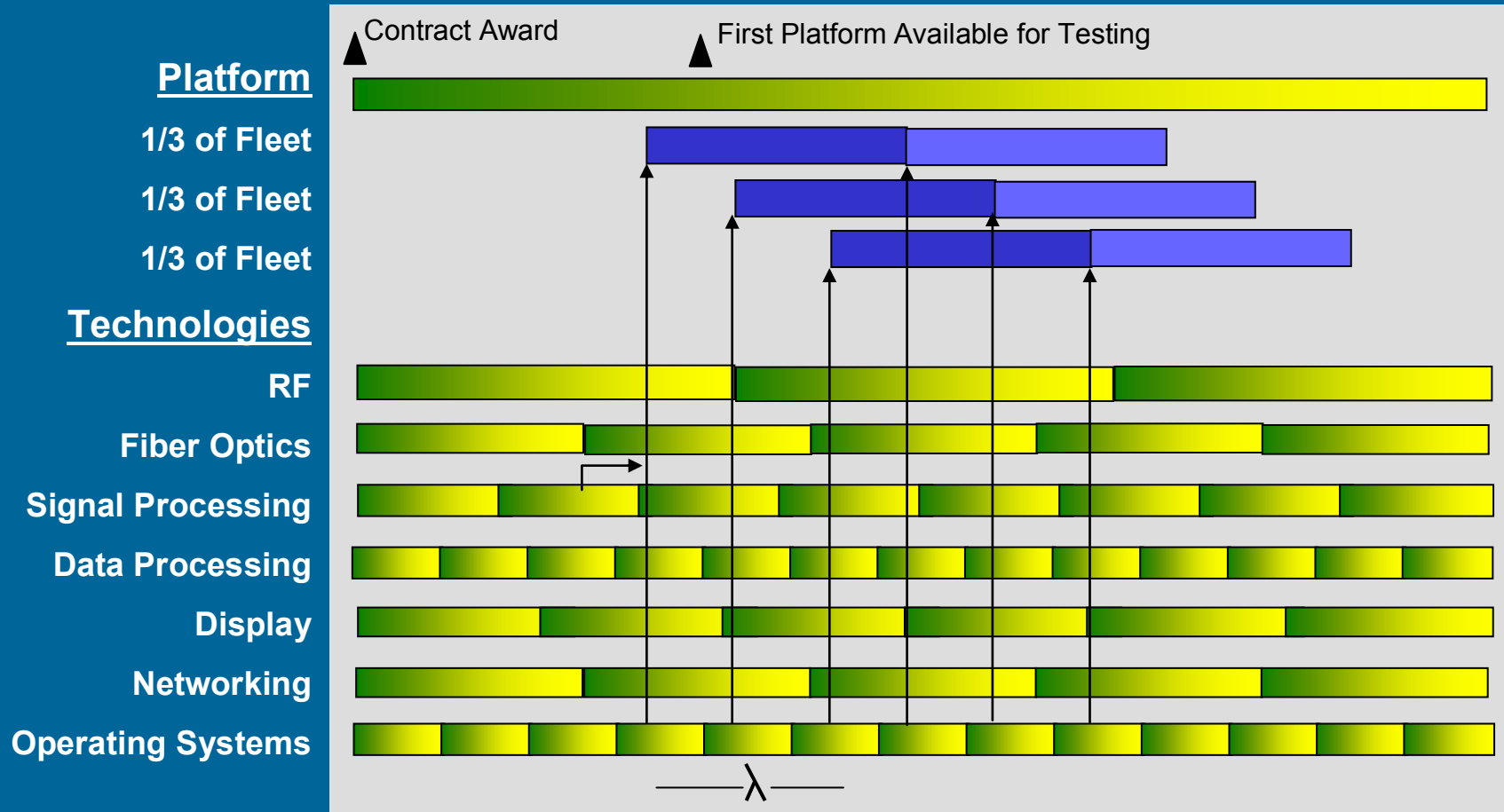
**Autonomous & Intelligent Design to Disposal Management & Control of Maintenance, Engineering, CM, Training, Field & Distance Support, Supplier/Repair, Warehouse, Inventory, Transportation, PHM, Government Interfaces & Portals**

# Design for Supportability

## The Technology/Time Baseline

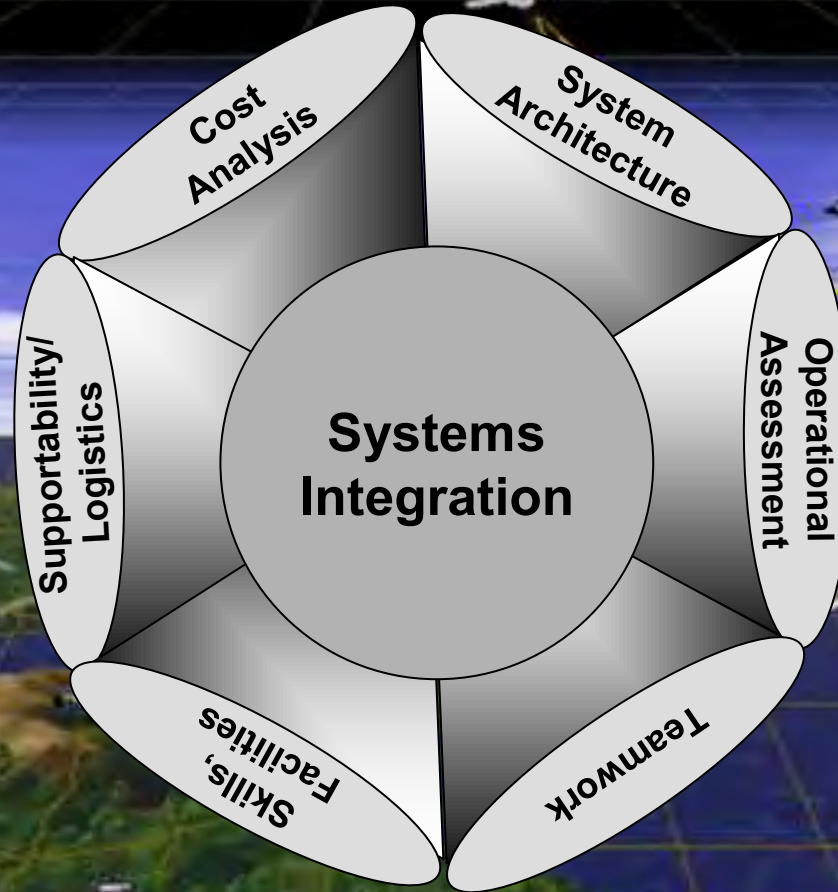


- Technology Migrations



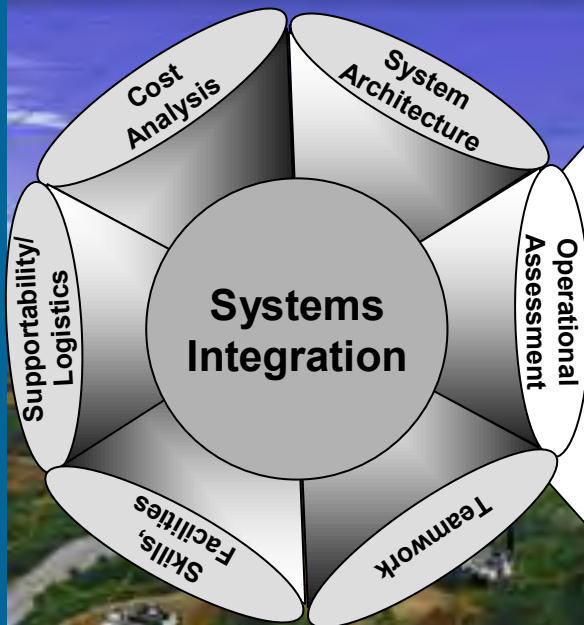
# Systems Integration:

## 6 - Major Elements to Systems Integration



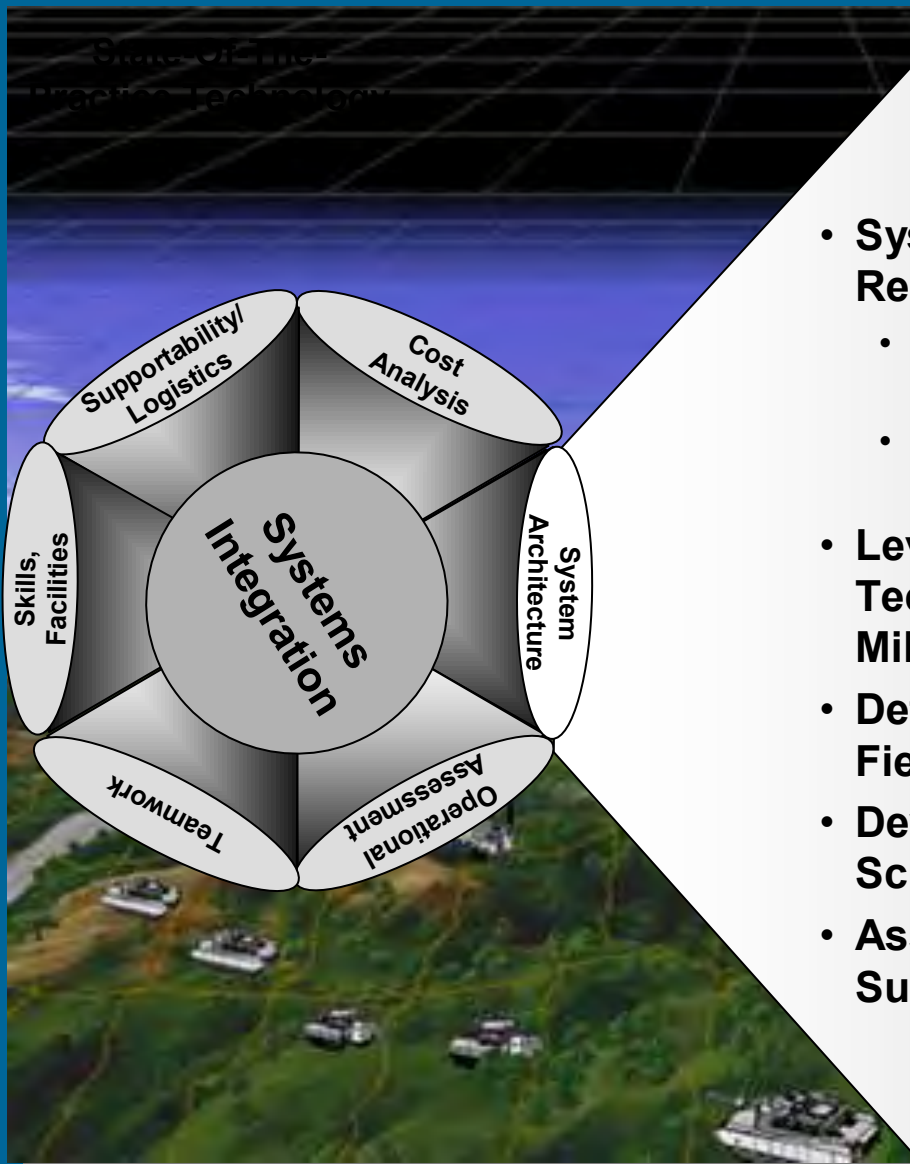


# Systems Integration: Managing Operational Effectiveness



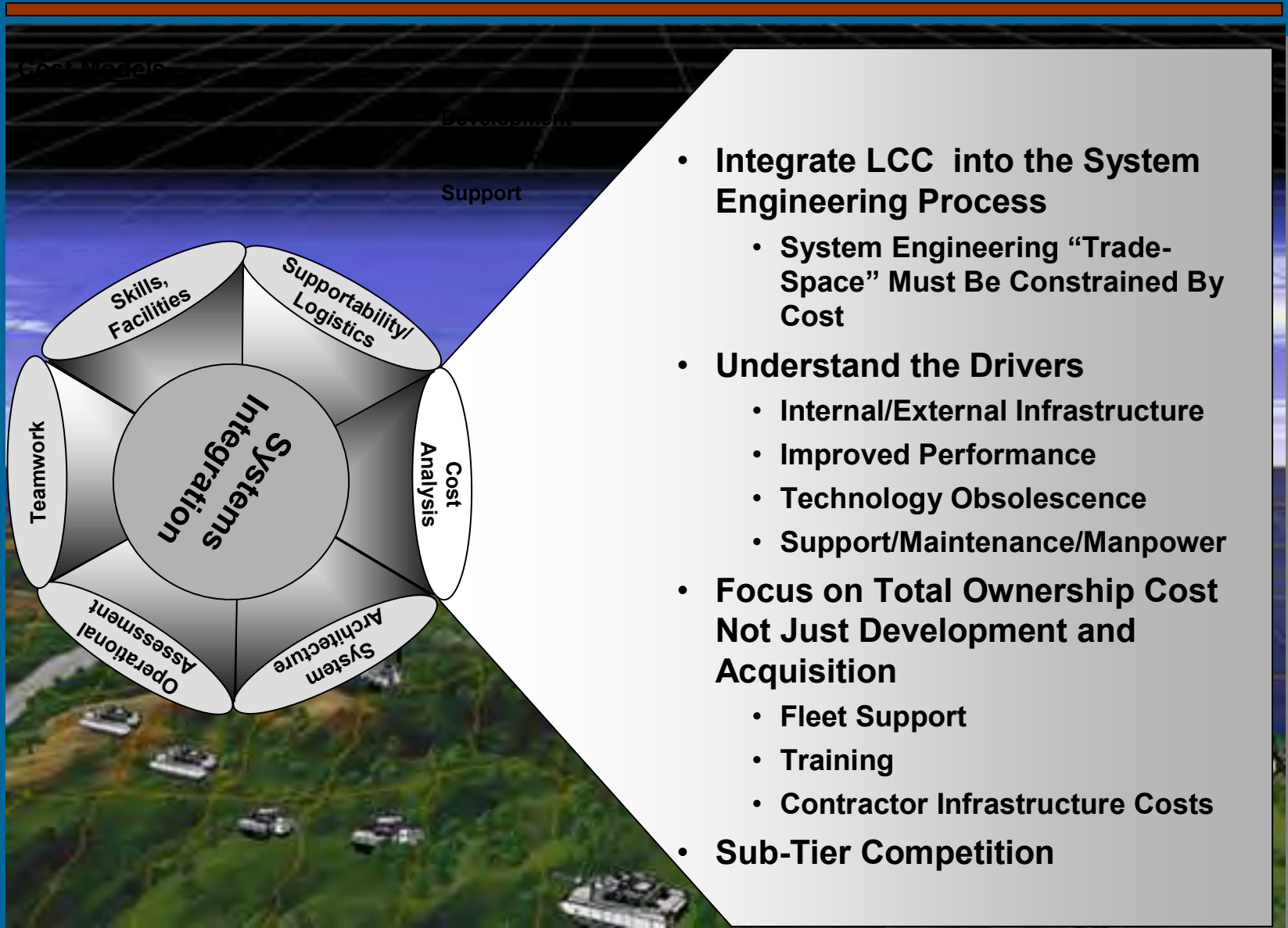
- **Focus on Mission Success and the Impacts of Multi-Platform Operations**
- **Transition from Operational Shortfall to Performance Requirements**
  - **Involve End-User in Defining System Performance Requirements**
- **Push Advanced Technologies to the Fleet**
- **Assess What is Achievable at an Affordable Cost & Acceptable Risk**

# Systems Integration: System Architecture



- **System/Subsystem Interface Requirements**
  - Identifying Standards and Their Migration
  - Maintaining an Open Architecture to Facilitate Future Enhancements
- **Leverage State-Of-The-Practice Technologies and Standards for Military Use**
- **Determine Impacts to Currently Fielded Platforms/Systems**
- **Develop Implementation Schedules that Optimizes LCC**
- **Assess Architectures from a Supportability Perspective**

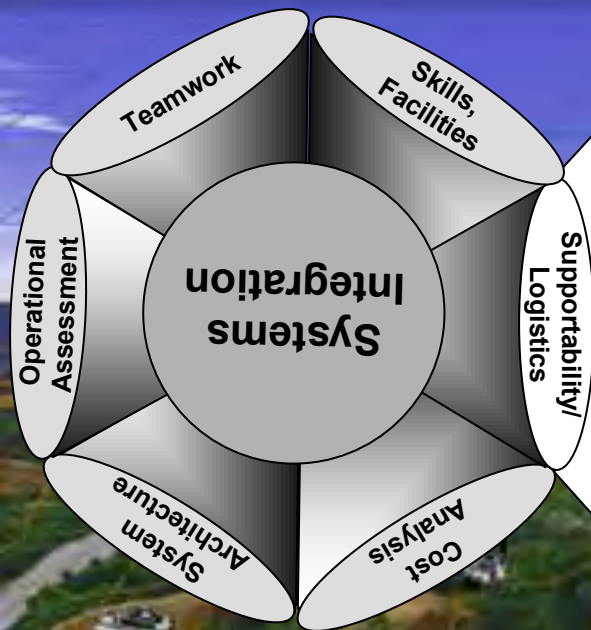
# Systems Integration: Cost Analysis





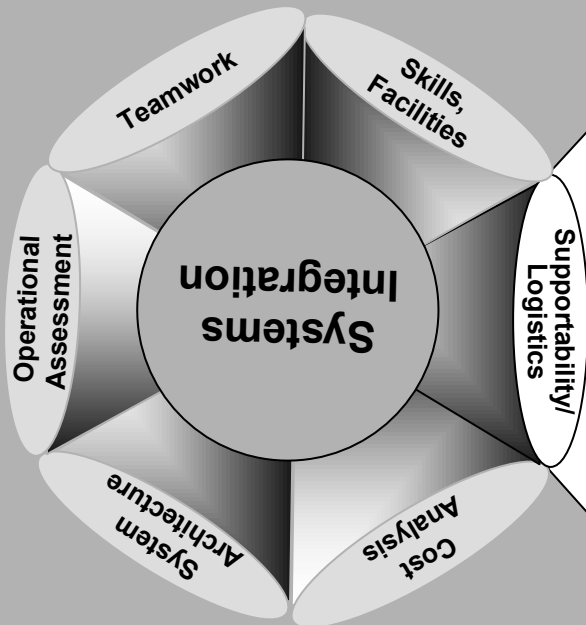
# Systems Integration:

## Supportability Engineering and Logistics Planning



- **Supply Support**
  - Spares Management/Optimization
  - IT Leverage to Supply Chain Management
  - Physical Commonality
  - Coordinate Technology Refresh with Spares Requirements
  - COTS Maintenance Agreements
- **Training and Trainers**
  - Operational Commonality to Reduce Skill Level Requirements
  - Embedded, Portable, Adaptable, Distance Training
  - Multi-Media Leverage to Training
- **Platform/System Documentation Requirements**
  - Multi-Media Leverage to Documentation
- **Facilities**
  - Prototype Laboratory
  - Total Asset Visibility/CM

# Systems Integration: Supportability and Logistics



## Supportability

**Better Integration of  
Supportability Engineering into Design**

**Innovative Quantifiable Metrics  
Innovative Models and Best Practices  
Integrated Design/Data Environment**

**Network Centric Logistics Planning  
Maintenance Concept/Infrastructure  
Logistics Information Management**

**Proactive Demand Forecasting and  
Responding to Logistics  
Requirements**

**Logistics**

# System Integration:

## The Total Sustainment Approach - Benefits

---



- To The Customer

- Reduced Total Ownership Costs (TOC)
  - Leveraging Commonality
  - Executing Technology Refreshment
  - Exploiting Commercial OEM Support Infrastructure
- System Infrastructure Performance Improvements  
Facilitate Functional Upgrades
- Elimination of Obsolescence
- Guaranteed Operational Availability

- To Industry

- Strategic Discriminator as a System Integrator
- Expanded Business Base
  - Technology Refresh and Insertion Planning
  - Management of Spares, Spares Inventory, and Repairs
- Uniform Resource Planning - Eliminates Large Shifts  
in the Manning Profile to Re-Design for Obsolescence

# Total System Sustainment Enablers

- Primarily through Implementation of the Systems Integration Approach
- Leveraged by business and engineering approaches
  - Effective Public-Private Partnerships
  - Performance-By-the-Hour™ Contracts ~ The Incentive for Industry to Reduce TOC, Which In Turn Results In:
    - MFOP ~ Maintenance Free Operating Period Design
    - Employing Use of PHM: Prognostics and Health Management
    - Web-Enabled Distance Support (e.g., NavalSupport.com) and Distance Training
    - Autonomic Supply Chain Management and JIT Support

***An Integrated Solution Set for Full Service Support***

# Pre-Systems Acquisition Activities

## Life Cycle Data Management in Handbook 859

Presented Friday, 4 March 2005  
NDIA TID CDM Symposium  
Miami, Florida

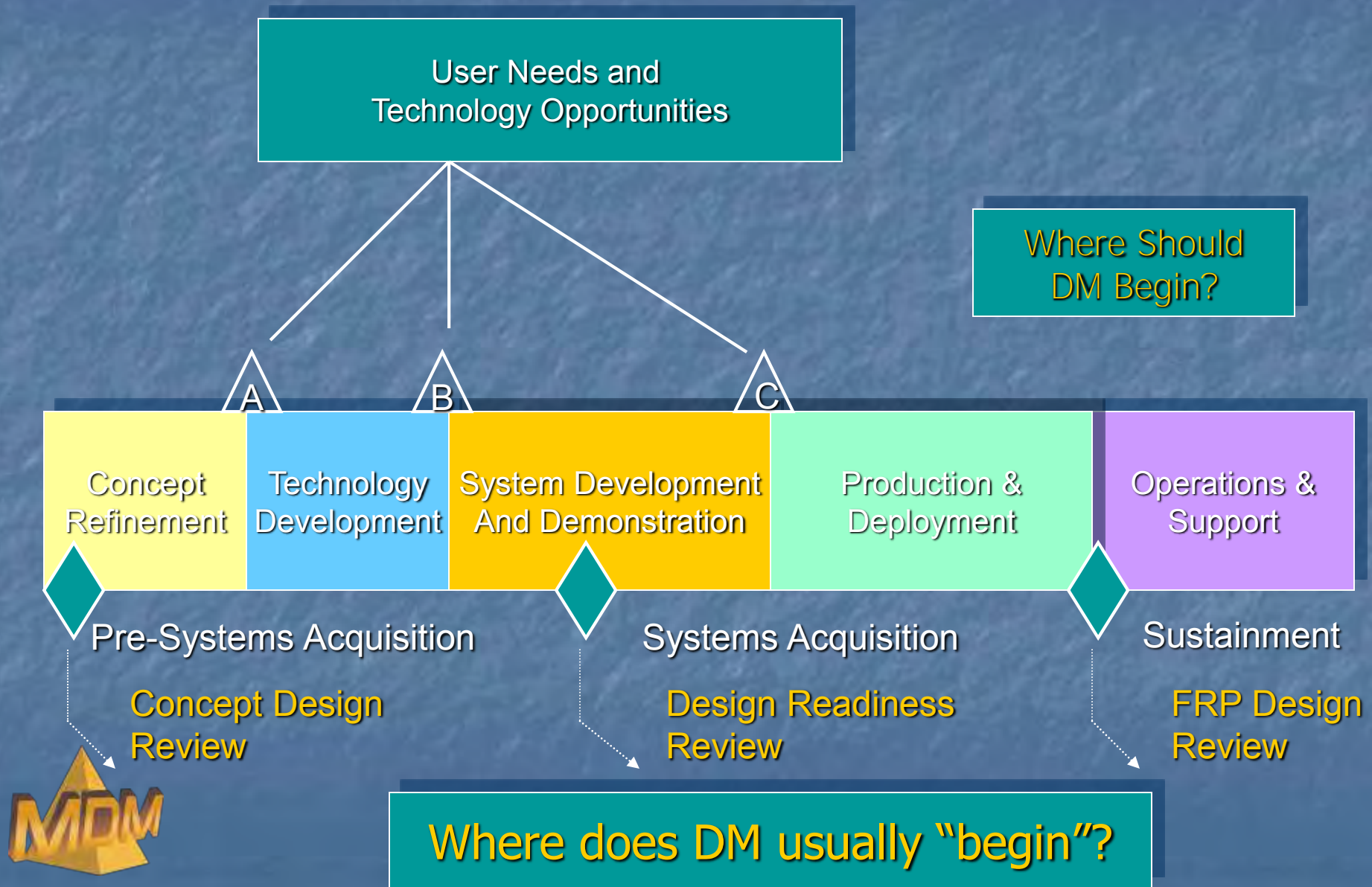
Cynthia C. Hauer  
Millennium Data Management, Incorporated  
Huntsville, Alabama





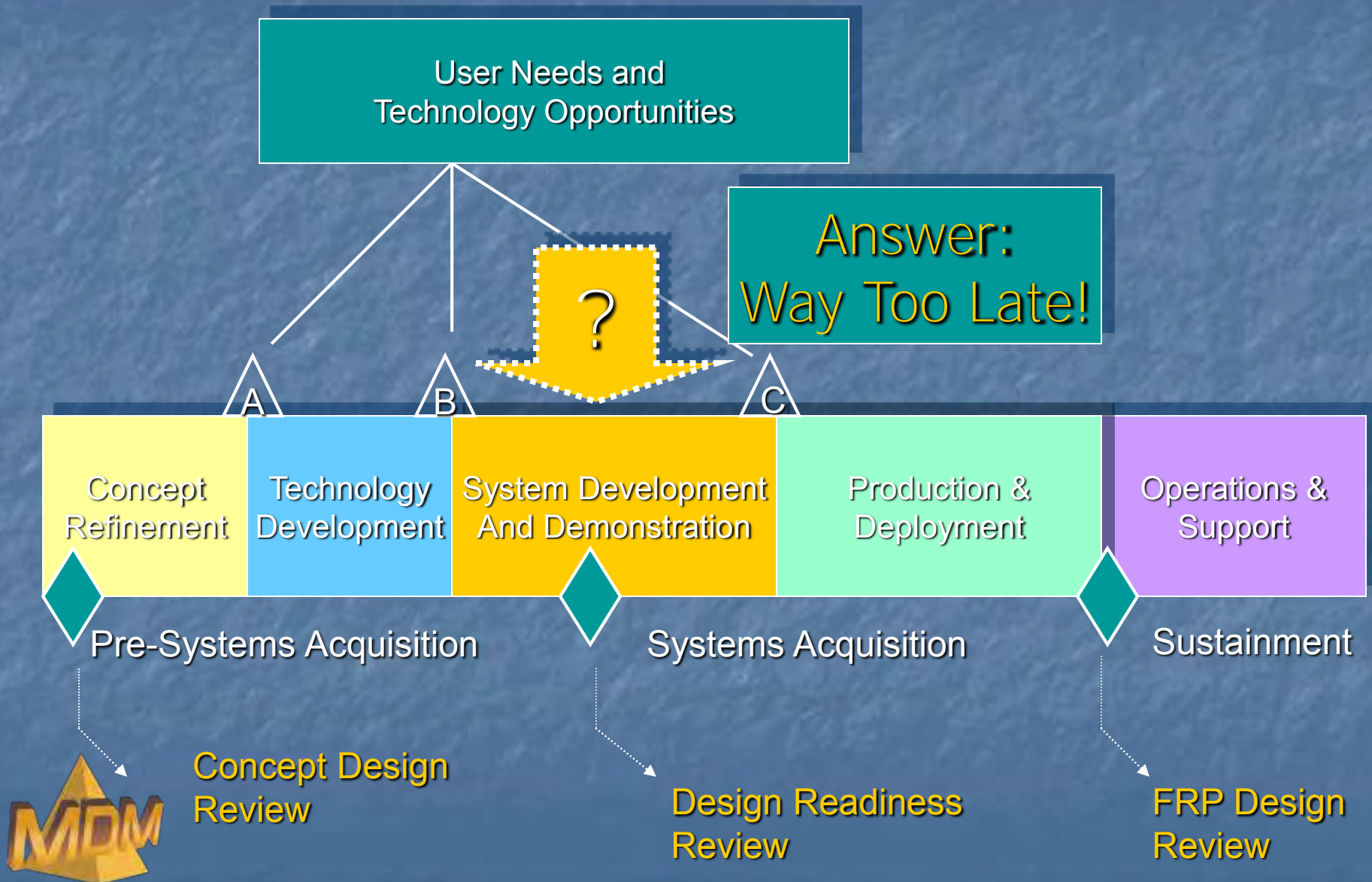
# Defense Acquisition Management Framework

## “Enabling Logistics for the 21<sup>st</sup> Century”



# Defense Acquisition Management Framework

## “Enabling Logistics for the 21<sup>st</sup> Century”





# Why is that?

- Usual answers ... and questions that I wish I could ask!
  - “too intrusive”
    - Really? How is it that documenting decisions and good planning are problems for you?
  - “too expensive”
    - We invest < 1-3% of total program dollars in DM, on a good day
  - “too soon”
    - And you wanted to wait until when?? Oh, yeah, right after the disaster!
  - “we’re not in production, yet”
    - No, and it’s highly likely that you won’t get there without better management of your process and your program!
    - And if you do, how are you going to know what you did to get to production?
  - “we haven’t made up our minds what we want to do, yet”
    - Don’t you need some traceability for your decisions and your requirements, as they evolve? Is this really an ad hoc program?
    - Don’t you want a defensible, supportable record of activities, plans, decisions, potential, and envisioned contractual outcomes?
  - “we’ll let our engineers/program managers/secretaries do DM”
    - Well, we’ve all seen how well THAT’s working ...





# Agenda

- What is Handbook 859?
  - A brief tour
- Questions to be answered
  - What is the landscape?
- Objectives of pre-acquisition activities
  - Focus
  - Questions
  - Sample value-added activities and contributions
- The Case for Early Intervention
- Aspects and elements of the DM Model



GEIA-859 was released on 4 August 2004  
In ANSI progression, now, and should be ANSI-859, already

# What is Handbook 859?

- Application guidance for ANSI-859
  - Industry Government Consensus Standard for Data Management
- Implements 9 essential and core principles for Data Management
  - Across sectors, across buyer and seller organizational boundaries
- Submitted to GEIA this week
  - 60-90 day approval cycle
    - Review, comment, resolution of comments, and voting by GEIA member companies





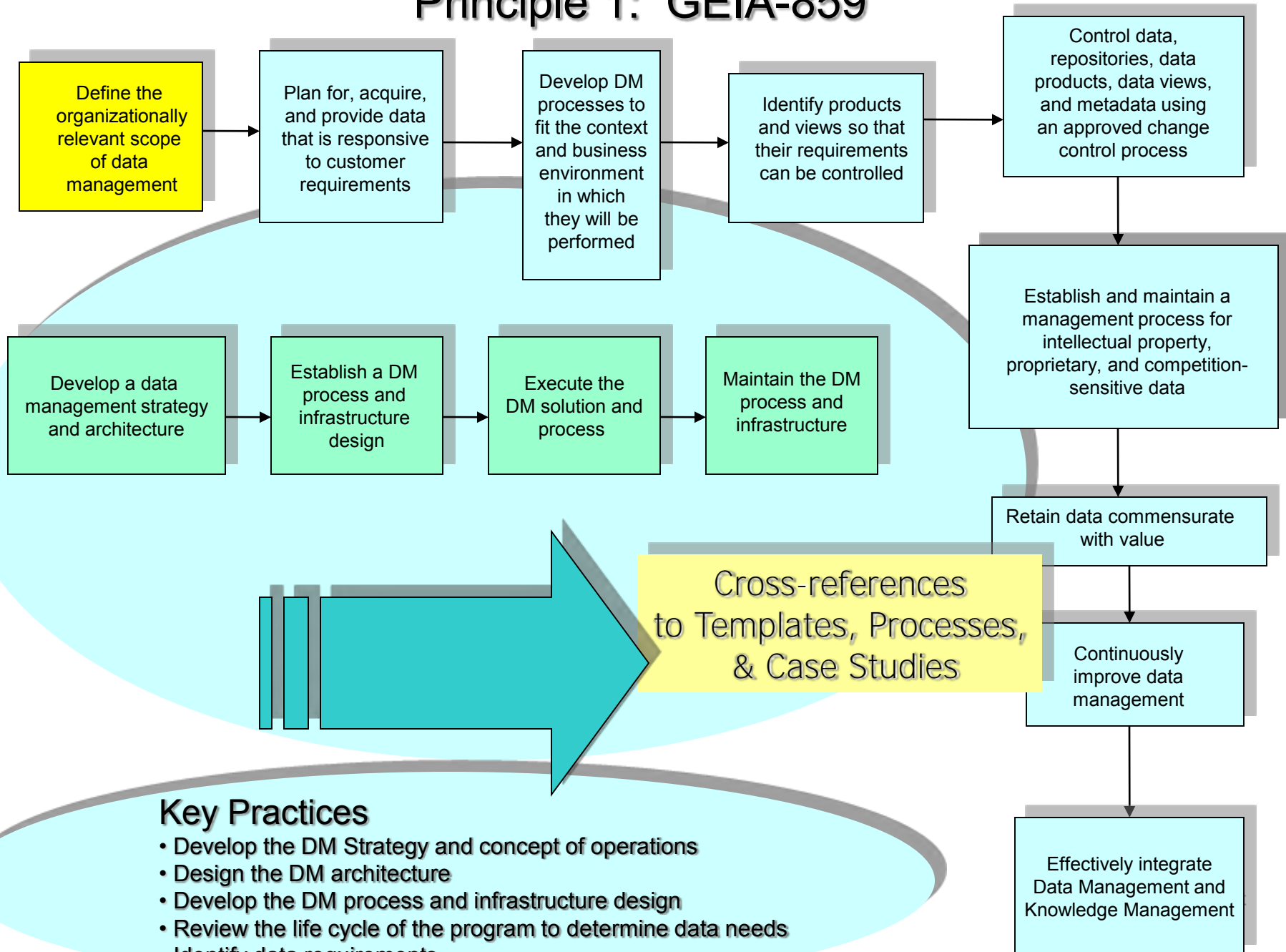
# Look and Feel for Handbook 859

## Content Overview

- Foreword
- Introduction
- How to Use the HB
- Intended Audience
- Resources
- Companion Documents
- Annexes
  - Intellectual Property, Acknowledgements, Continuous Improvement, Case Studies, **Flow Templates**, Glossary, References, Matrix from ANSI-859 to Handbook 859
- Full lifecycle DM
- Identification and Definition
- Acquisition and Preparation
- Data Asset Control
- Data Retention and Disposition
- Data Strategy
- Concept of Operations
- Data Preservation



# Principle 1: GEIA-859





# Questions Answered by Handbook 859 (Pre-acquisition Section)

- What is the **scope** of the DM process?
- What activities **comprise** the DM process?
- How is DM activity **related** to other functional activities and disciplines?
- What are the DM **objectives for each phase** of the program life cycle?
- What DM activities are **performed** in each phase? What decisions are made and what are the **criteria** for making them?
- What are the **benefits derived** from DM activities, and what are the risks if the activities are not performed?
- How can the DM process be **measured**, and how do the measurement metrics relate to DM objectives, and management objectives?



# Scope of pre-RFP Activities

- Activities conducted very early in the DM lifecycle
  - Actually may precede the beginning of the program lifecycle
    - Example: requirements for a new capability
    - DM should capture and manage the documentation of initial requirements, significant changes in direction, and trade-offs that are made
- DM perspective ensures/provides data for later requirements traceability



DM Activities: 1) planning for DM across the lifecycle; and  
2) Achieving and applying a Strategic DM perspective.



# Sample Value-added DM Activities

## ■ Pre-RFP

- Data Strategy, CONOPS, data requirements

## ■ Concept Refinement

- Program decision criteria, provenance, outcomes
- Technology trades analysis results
- Down select/decision criteria
- Requirements and objectives status/evolution
- Emerging logistics/engineering issues
- Test and evaluation issues
- Modeling and simulation inputs, outputs, parameters, outcomes



Early ID, intervention, communication, and status tracking

# Sample Value-added DM Activities, 2

- Technology Development
  - Analyses on technology evolution
  - EE, ME, human factors issues
  - Architecture design, trades
- System Development and Demonstration
  - SEMP, TEMP planning and element integration
  - Interface working group support
  - Flight test planning
    - Optics, telemetry, radar, quick-look data planning and support
    - Coordination with test ranges and facilities
- Production and Deployment
  - Spares and repairs issues
  - Next generation production decisions and challenges
  - Packages of data for review, decision, and communication



Note that the earlier the involvement, the more value is added



# Sample Value-added DM Activities, 3

- Operations and Support
  - FMS data packages
  - Archival packages
  - Continued contract support (access ...)
  - Logistics spares and repairs
  - Support to the item manager
  - Release management activities

These contributions are the equivalent of taking as aspirin a day to prevent heart attacks and strokes!



Early, sustained involvement assures that data is in place

# Aggregate Benefits

- Acquisition strategy is enhanced
  - Data is identified for access only, for retrieval schedules and needs, and for acquisition priorities
  - Requirements are validated, tracked, and verified
    - Product data as well as supporting business data
    - Intellectual property considerations are identified early on
  - Down-select teams
- Program management tasks are supported
  - Decisions, actions tracked
  - Provenance established
- Logistics support strategy is provisioned correctly
  - Appropriate data is identified
    - COTS planning
    - Proper data is acquired, if access is not sufficient
    - Costly contract modifications are avoided\* [~2M, generally]
- Post-contract issues are addressed
  - Data marking, data rights
  - Records management
  - Product release management
  - Contractual requirements are supported

\* This doesn't count such aspects as Intellectual property and data rights "changes"





# New Perspectives

- Data acquisition or information acquisition?
  - They are different things
  - They are treated differently by data providers
  - They are valued, considered, and sold at radically different prices
- “Insight” management as opposed to “oversight” management
- Expectations are clearer, outcomes are structured and pre-ordained



Isn't this what Logistics is all about?

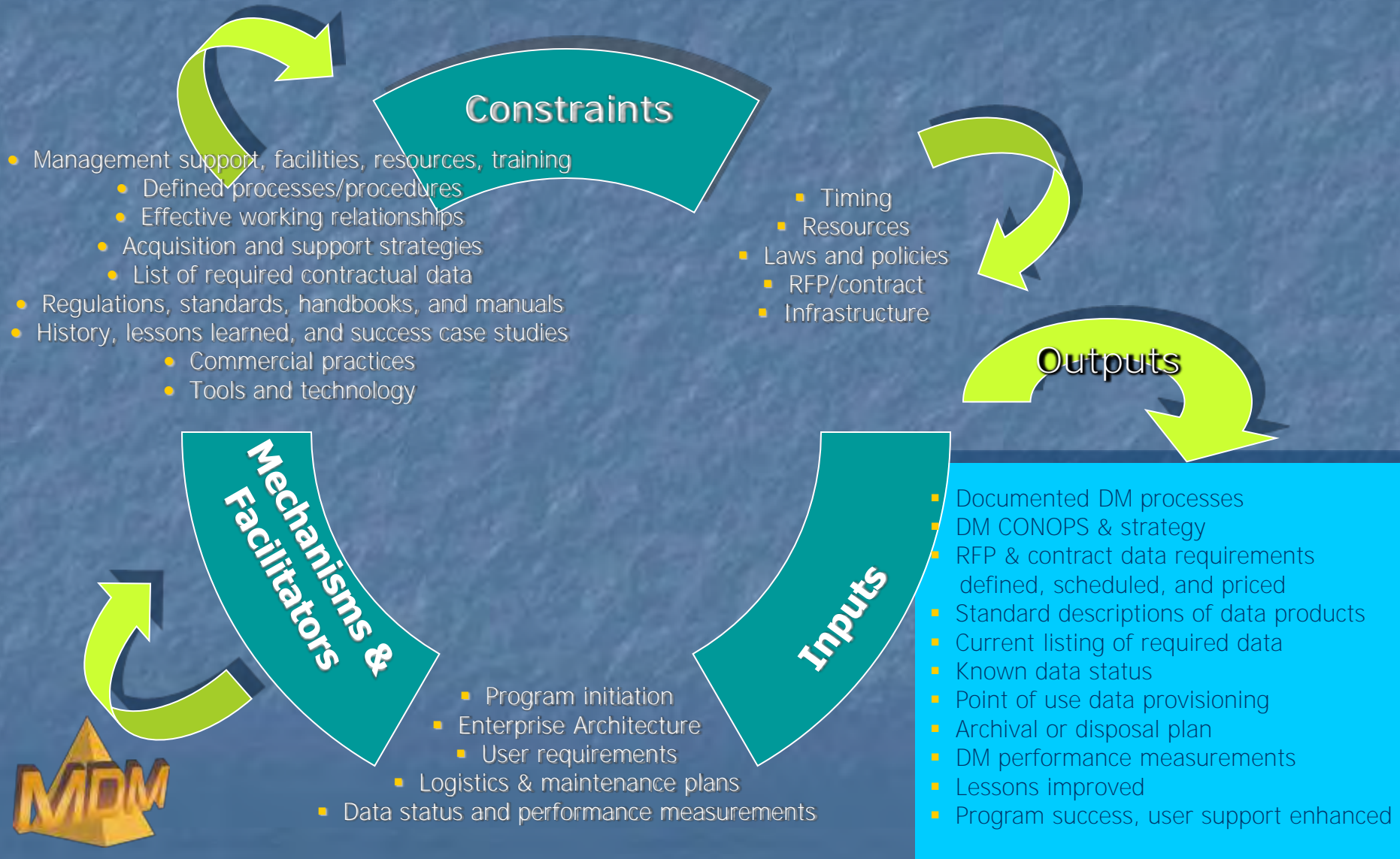
# Objectives of the Pre-Acquisition Phase, for DM

- **Focus:** types of data to be generated, accessed, acquired, exchanged (inputs and outputs)
- **Focus:** the life cycle of the data, the system being designed, and the uses to which data will be put
- **Focus:** sizing the solution
- **Focus:** identifying existing or emerging constraints, facilitators, roadblocks, inconsistencies, redundancies





# The DM Process



# Characteristics of the DM Process Model

- **Inputs**
  - Information needed to initiate and perform the process
- **Constraints**
  - Factors or information which inhibit, condition, or limit the process
- **Facilitators**
  - Information, tools, methods, and technologies which enable or enhance the DM process
- **Outputs**
  - Results derived from the process, and the information provided by the process, itself





# Elements of the Top-Level DM Activities Model

- Laws and Regulations
- RFP and contract
- Acquisition and support strategies
- User requirements
- Provider recommendations
- DM planning, procedures, and training
- Data use metrics
- CONOPS/Data Strategy
- Data requirements to be placed on the contract
- Data provider proposals
- Data Management policy, procedures, and training
- Data provider submittals
- Product data
- Requests for data
- Access rules
- Negotiated and revised list of required data
- Data status
- Data provided to the point of use
- Availability for access
- Archival and disposal





# Characteristics of the DM End Process

- Integrates DM process and supporting system
- Captures and manages configurable items which comprise the technical baseline
- Correlates and provides traceability among requirements, design, decisions, and rationale
- Supports configuration management procedures
- Serves as a ready reference for the development team
- Uses common and compatible information systems, tools, and formats



Translation?

# Broad Scope for DM

- Relates to the complete program life cycle
  - Systems engineering, program management, configuration management, business management, operational support, retention, archival
- Embraces use of common buyer and seller data formats, when and where feasible
- Reflects seamless integration of DM with all other functional activities and disciplines
- **Extends to true “management of data” to create and provide a structure for insight management**





# Setting the Stage for Effective DM

- USG and Industry are moving to more concurrent acquisition process using Integrated Product Team management
  - This requires timely, accurate, cross-functional access to data
  - **The IT infrastructure is essentially “ready”**
    - DM processes and scope have lagged behind technology
- Traditional DM processes are still valid
  - New paradigmatic shift to “digital” format rather than paper-based products, and “access” rather than “acquire”
- Benefits and ROI are easily discerned
  - Better trade-off decisions
  - Problem identification comes much earlier in the life cycle and the process
  - Cycle times are reduced for decisions, information processing
  - Overhead costs eliminated or reduced for receiving, storing, and processing hard copy documents and product data



# Outcomes Gained

- Better trade off decision support
- Enhanced communication between data providers and data acquirers
- Earlier identification of problem areas
- Decreased cycle times for decisions and information processing
- Elimination of overhead costs of receiving, storing, and processing hard copy documents



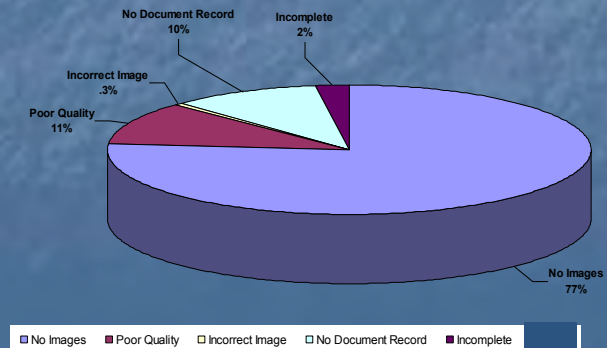
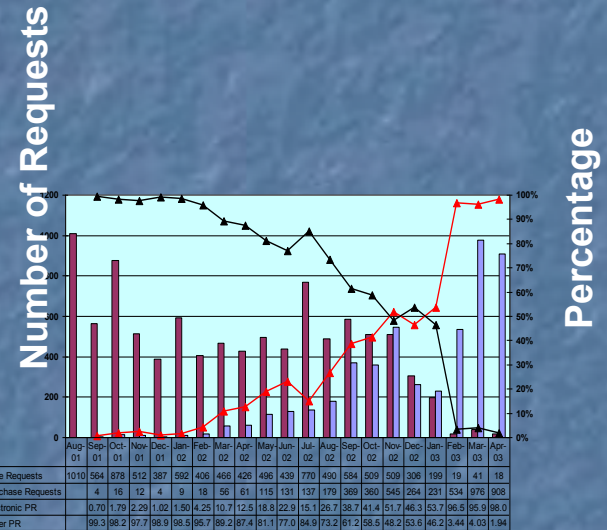
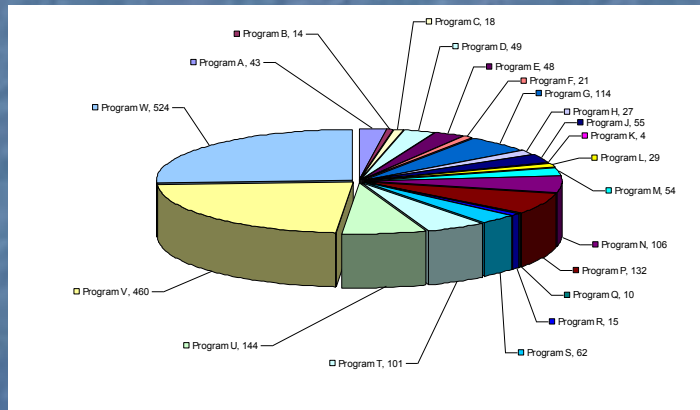
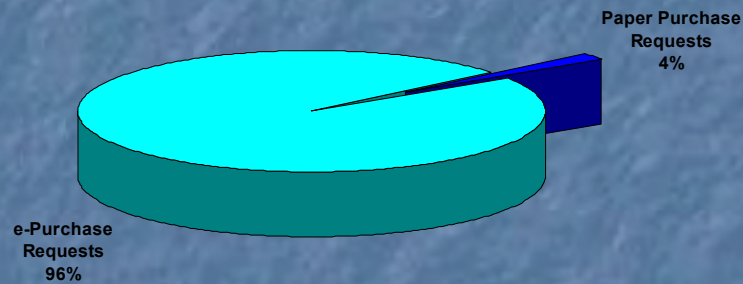


# Sample DM Metrics

- On-time deliveries by year
- Deliverables delinquencies
  - Root process drivers by year, by program
- Classified cabinets eliminated by year, by program
  - Contract retirement, archival, retention schedules
- Unclassified documents scanned for use
  - Search time reduced or eliminated, offsite and onsite
- Electronic data interchange
  - Enabled by year, by program
- Library/website hits and patron visits
- Average DM funding by product line, by program, by year
- Aggregate DM core process consistency and improvements by year, by program
- Class II reasons for change (requirements, optics, SW, tech data, supportability, parts obsolescence) by program, by year
- On-time changes, YTD
- Class II change trend
- Data errors found by EDS
- Paper purchase requests versus electronic purchase requests
- Paper or electronic TDPs



# DM Metrics for Management





# Next: Acquisition and Preparation

- The right amount of data will be bought, delivered, or accessed
- The best data to support decision making and other customer functions will be available when needed
- Timing of delivery will be optimized
- Statements of work and objectives are more easily written, clearer, and resulting in fewer unpleasant surprises for the buyer and the supplier
- Data products will be discoverable, and when retrieved, will be associated with other relevant data products, product data, and views
- Data products and views will have metadata that help to ensure appropriate use and re-use
- It will be possible to recreate the set of data products and views in use at a given point in time





# Summary

- Lots has happened in DM
  - DM's not your father's Oldsmobile, anymore
- The benefits gained from the investment in the **solution don't even compare**
- ANSI-859 and Handbook 859 are ready to assist in better DM for you and your organization
- The DM panel has much more ahead
  - XML business objects modeling
  - Automation of DM processes inside PDM tools
  - DAU course modules for 13 career fields
    - Available for industry as well as for government



# EIA-836 CM Data Exchange and Interoperability

## CM Data to Support the Logistics Process

**Alan Lager, MLR Associates**

6585 Maggiore Drive  
Boynton Beach, FL 33437  
(561) 735-9511 / (561) 704-6646  
[alan\\_e\\_lager@msn.com](mailto:alan_e_lager@msn.com)  
<http://www.mlrassociates.com>

NDIA TID Symposium  
Miami, FL ~ March 4, 2005



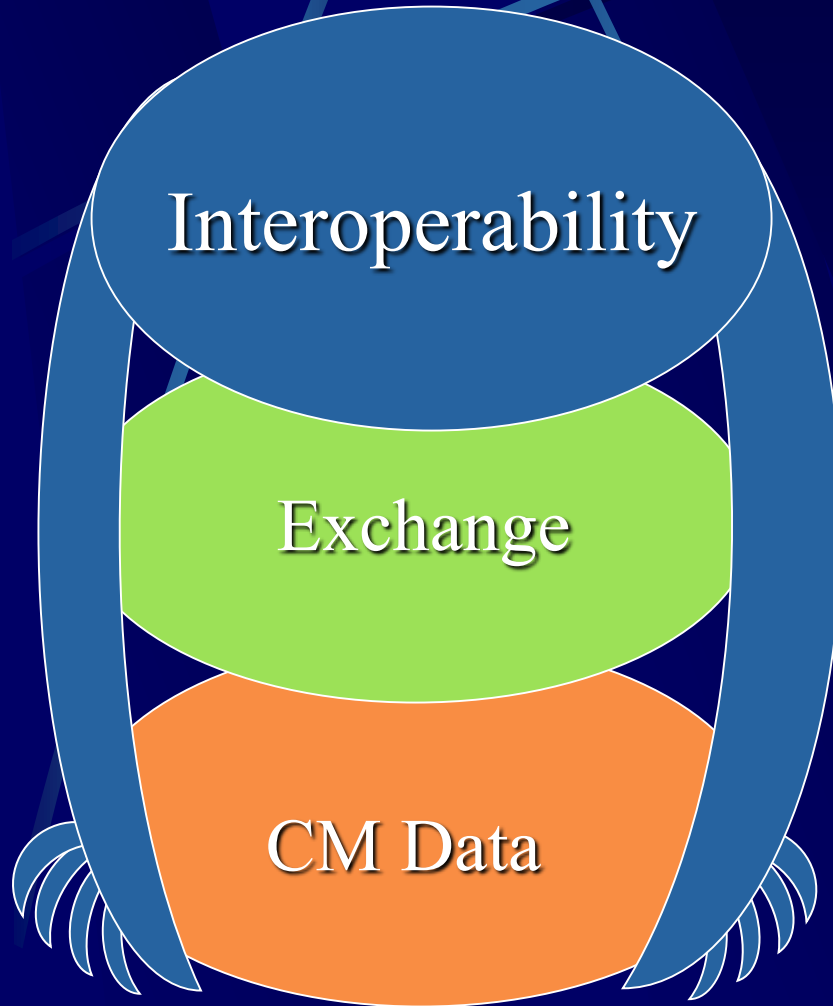
# CM Data Exchange and Interoperability Agenda

- The Importance of CM Data to Logistics
- What EIA-836 is
- Applying EIA-836
- Revision/Version History
- Continuing EIA-836 Development
- EIA-836 Five Year Plan

# The Importance of CM Data to Logistics

- A primary purpose of CM has always been to assist in logistic support
- But
  - Evolutionary Acquisition
  - Reduced Logistics Footprint
  - Rapid Deployment & Product Support
- Demand
  - Flawless configuration identification and control
  - Known multiple configurations of end items and corresponding support systems
- In other words -- **Timely, Accurate CM Data!!**

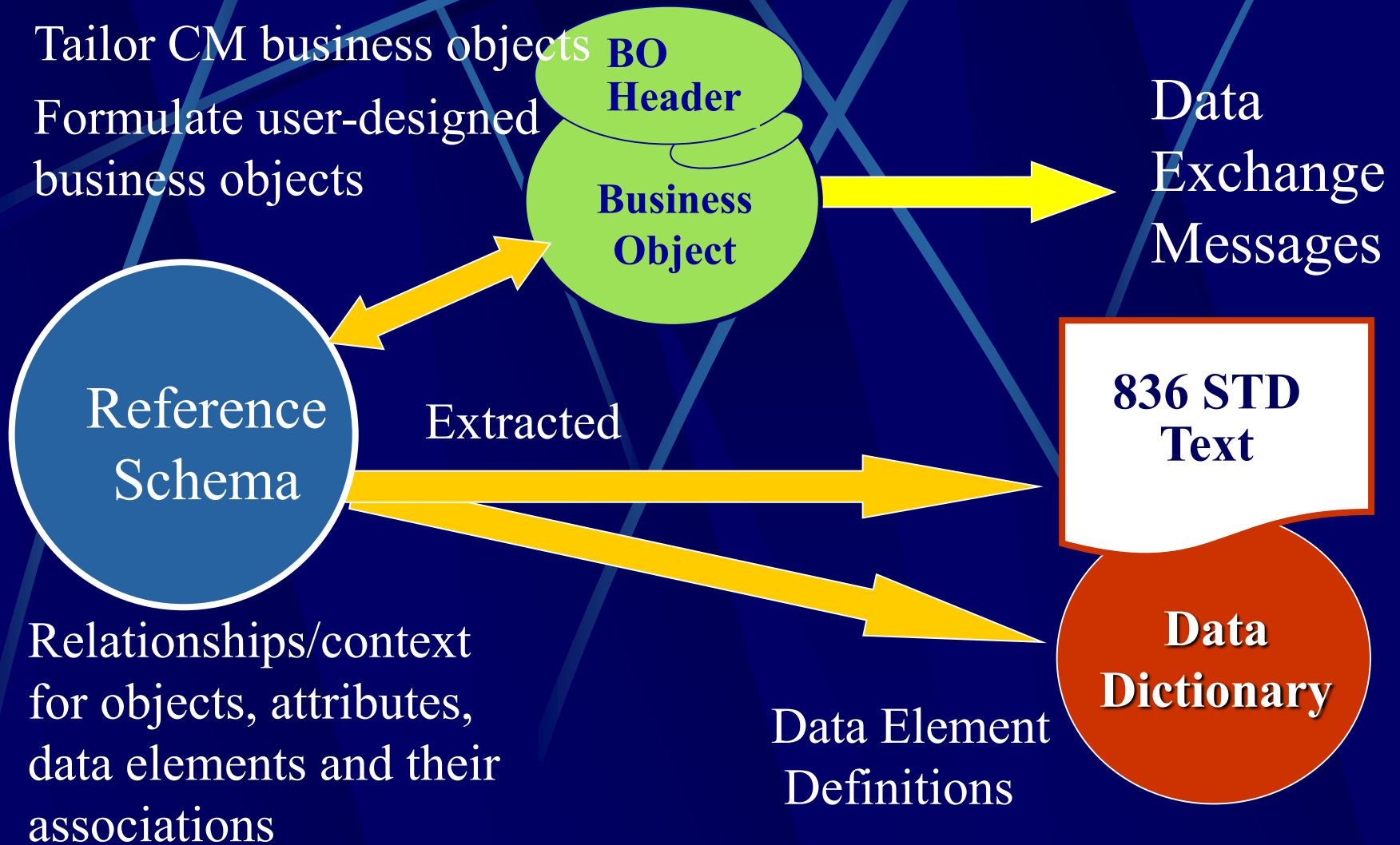
## What EIA-836 Is



- The ability to make sense out of the stuff
  - **Reference Model & Data Dictionary**
    - **Data Elements**
    - **Definitions**
    - **Relationships**
- The ability to create Information Exchange Sets
  - **Business Objects**
- The ability to find unambiguous definition of all the information you need to know about CM (but were afraid to ask)



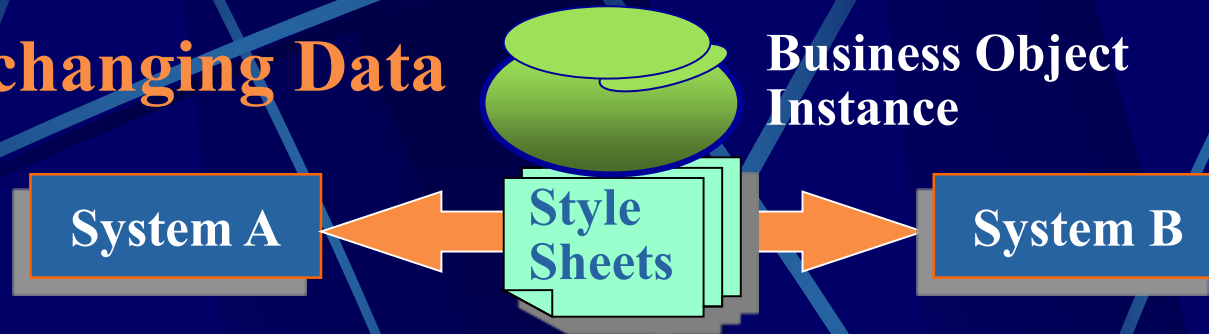
## What EIA-836 Is



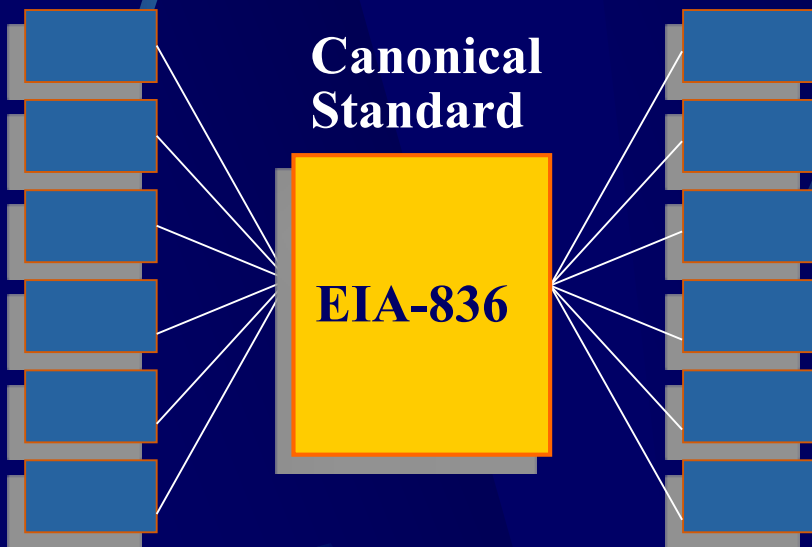


# Applying EIA-836

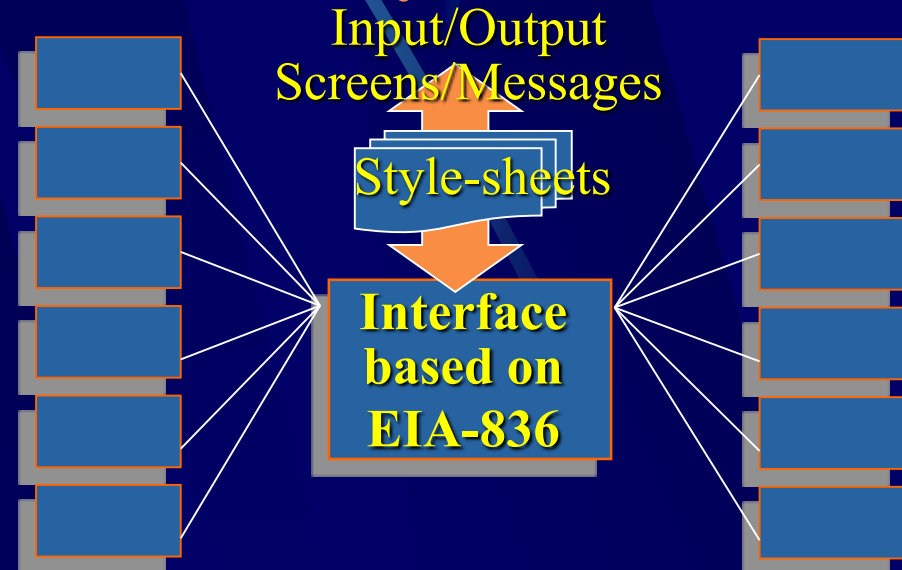
## 1. Exchanging Data



## 2. Mapping Databases



## 3. Interfacing Multiple Systems





# Revision/Version History

- Project initiated January 2000
- Initial release published 15 June 2002
  - Reference Schema Version 1.0
- Incremental Rev with “standalone” Business Objects - January 2004
  - Version 1.1 (Redlined) & Version 1.2 (Redlines Accepted)
- EIA-836 Revision A (Schema Version 2.0) in process
  - New look
  - Newer XML technologies
  - Consistent design methodology
  - Focused on objects and relationships
  - Less redundancy, easier creation and maintenance

EIA-836

Revised  
Jan 05

# FIVE YEAR PLAN

836A Version 2.0

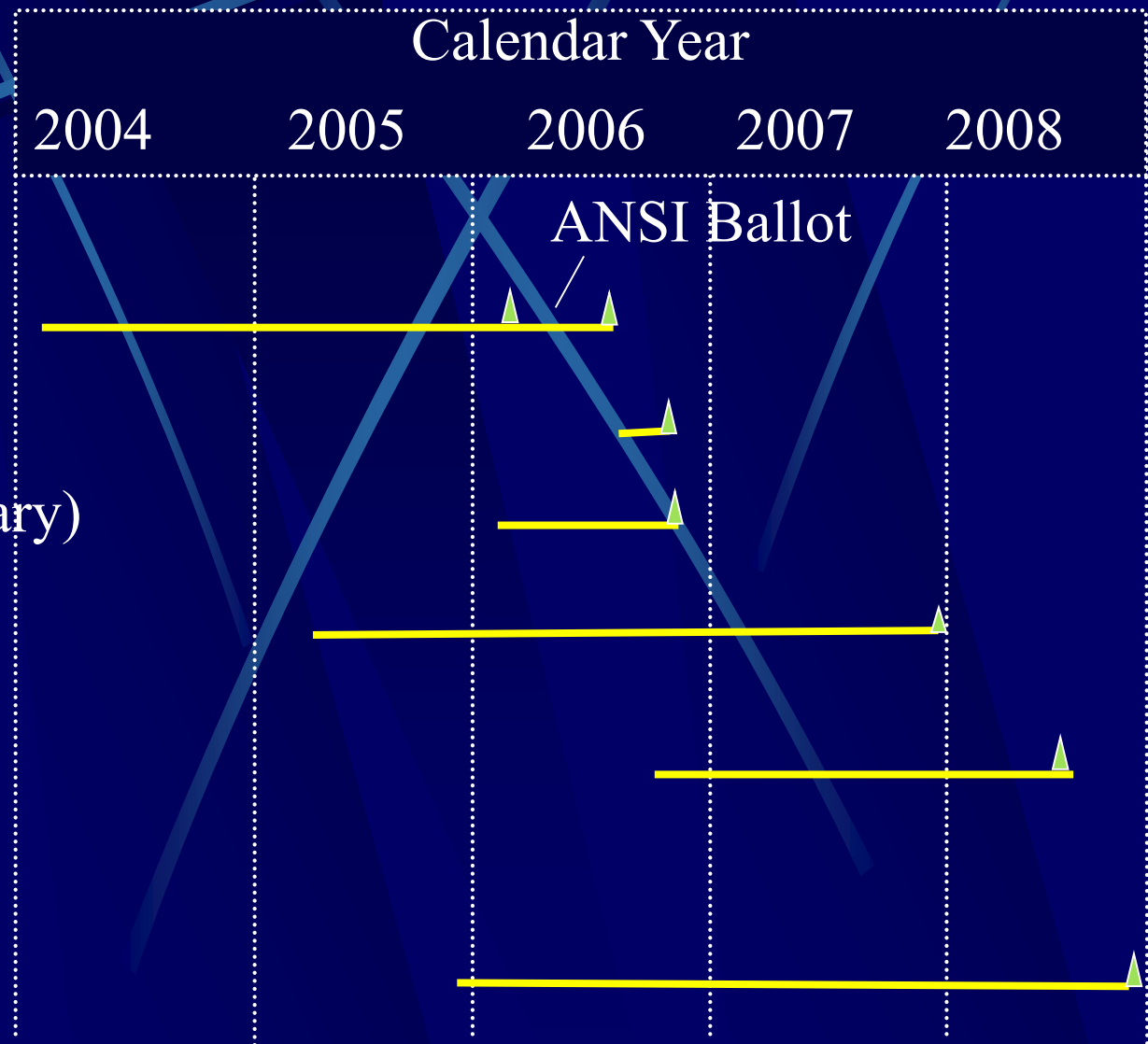
To DoD XML Registry

Handbook (if necessary)

Application/Training  
Integration w/Tools

Version 3.0 Expand/  
Merge DM

Institutionalize as  
Part of CM/DM  
Process





# Army Aviation - Logistics For The Warfighter

3 March 2005



Dr. Thomas Pieplow  
Associate Director for Aviation, AMCOM



# Challenges We Face

**Demands will increase from FY04 rates ... which were an all time high**



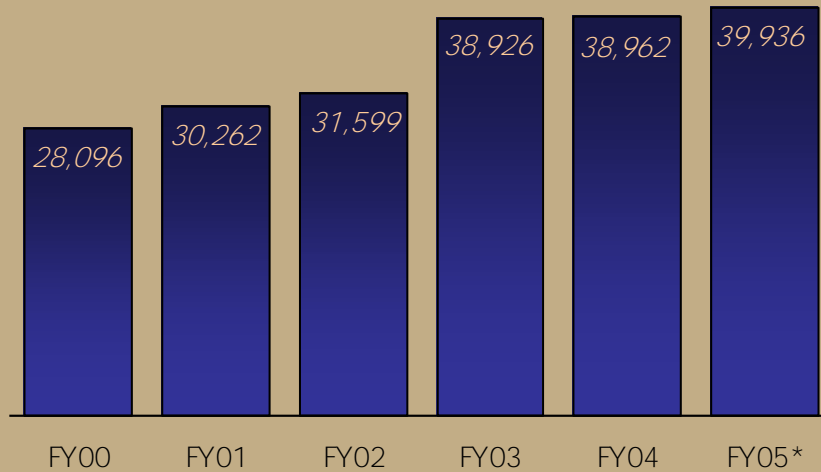




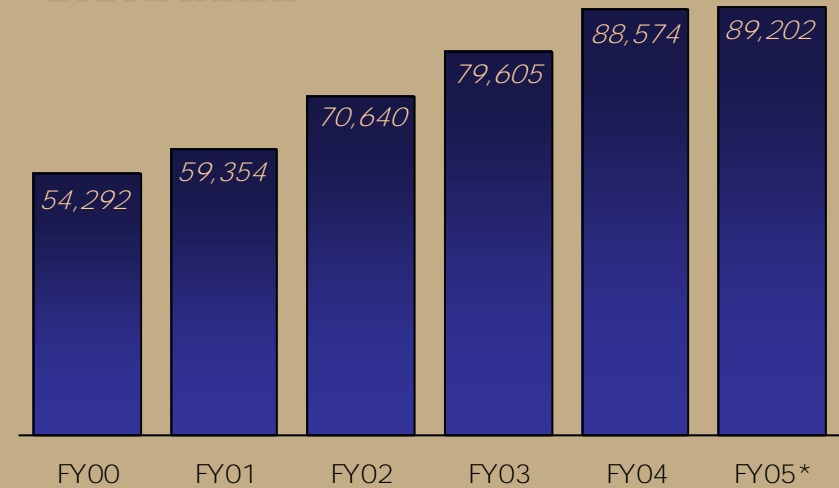


# Aviation Will Always Be A Key Component

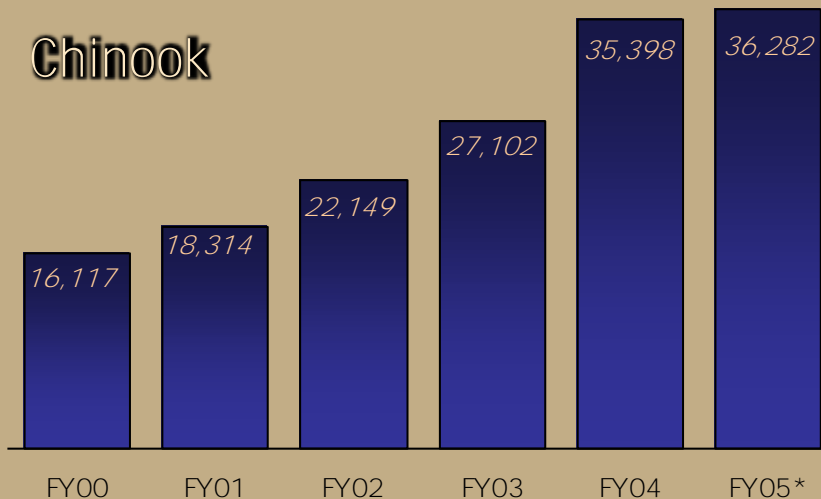
## Apache



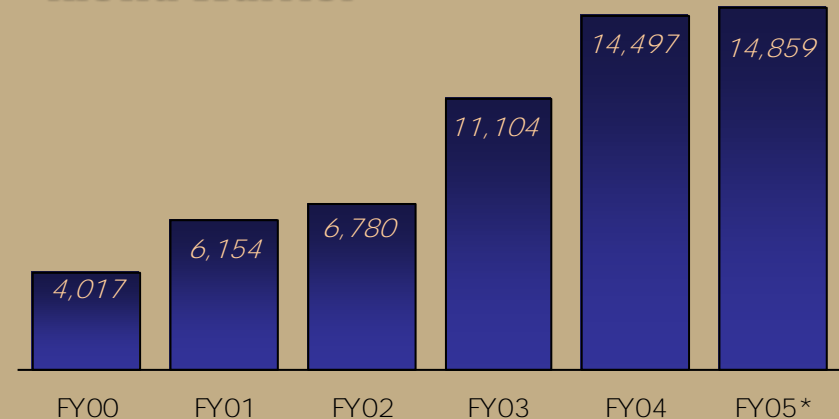
## Black Hawk



## Chinook



## Kiowa Warrior



\* Projected

■ Demands

*Demands Continue to Increase*  
*FY05 Projects 2% Higher Than FY04 and Growth Since Sep 11 Over 65%*



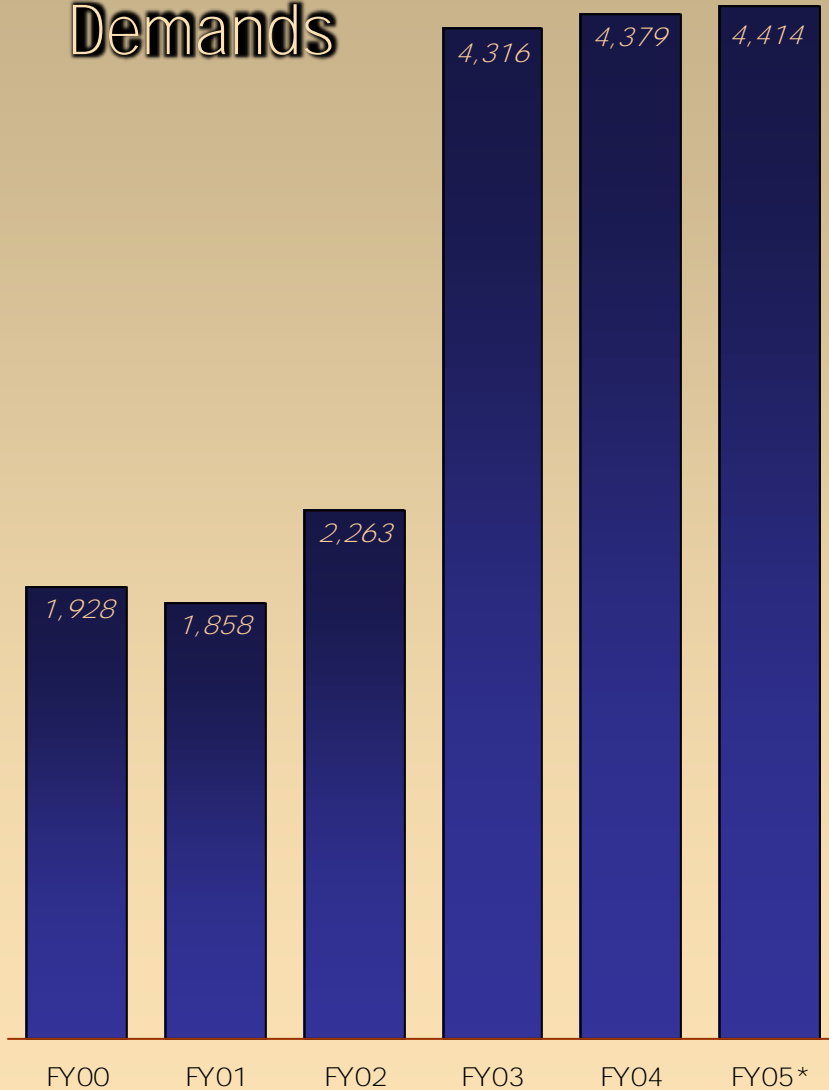
**Battle damage,  
right wing**



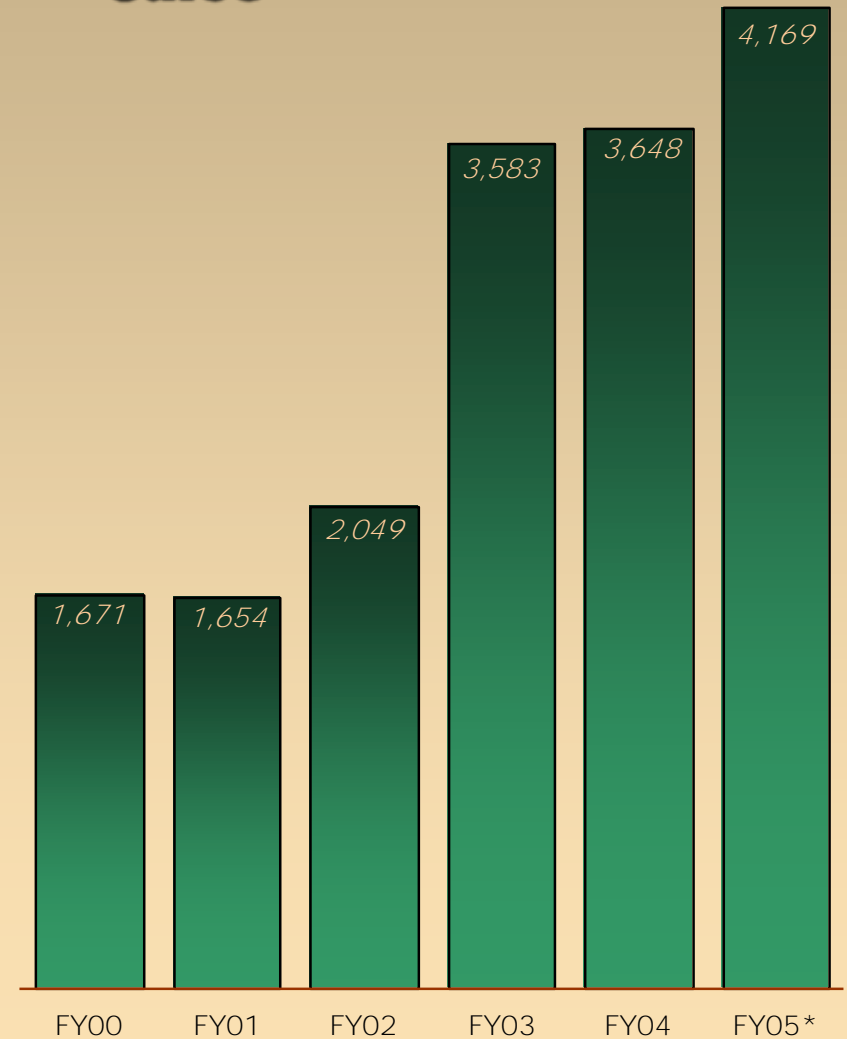
# No Matter How You Measure, Aviation Is The Backbone Of Support

\$M

## Demands



## Sales



\* Projected







# Army Fleet in OIF

**511,276 Total Hours:**  
**01 Feb 03 – 28 Feb 05**

## **AH-64** (143)

96,750 Hours

MC: 88%

OPTEMPO: 28



## (254) **UH-60**

179,726 Hours

MC: 86.6 %

OPTEMPO: 33.8



## **CH-47** (44)

32,140 Hours

MC: 72.8%

OPTEMPO: 30.6



## (30) **Fixed Wing**

31,982 Hours

MC: 86.6%

OPTEMPO: 43.9



## **OH-58** (80)

134,939 Hours

MC: 80.4%

OPTEMPO: 73.3



## (12) Shadow 21,205 hrs **UAV**

(1) Hunter 8182 hrs

(1) I-GNAT 3997 hrs

(122) Raven 2355 hrs

35,739 Hours



*OPTEMPO Significantly Higher than Peacetime*



# Army Fleet in OEF

**73,087.7 Total Hours:**  
**01 Feb 03 – 28 Feb 05**

## **AH-64A (19)**

28,530 Hours  
MC: 82%  
OPTEMPO: 56



## **(37) UH-60**

14,031 Hours  
MC: 76.4%  
OPTEMPO: 38.1



## **CH-47 (23)**

20,759 Hours  
MC: 82%  
OPTEMPO: 43.6



## **(13) Fixed Wing**

5823 Hours  
MC: 86.8%  
OPTEMPO: 48.9



## **UAV (6 Raven)**

531.7 Hours



## **(16) OH-58**

3413 Hours  
MC: 83%  
OPTEMPO: 48.3



*OPTEMPO Significantly Higher than Peacetime*











# Challenges We Face

**Demands will increase from FY04 rates ... which were an all time high**

Support for OEF/OIF units has been exceptional, but improvements must extend to all aviation customers



# AVAILABILITY IMPACTED BY FUNDING SHORTFALLS

## \$'s Invested

\$385.1

\$577.3

\$639.5/\$880.9

\$1033.2

\$1219.8

\$2905.1

\$2811.2

**FY97  
Short  
\$187M**

**FY98  
Short  
\$32.5M**

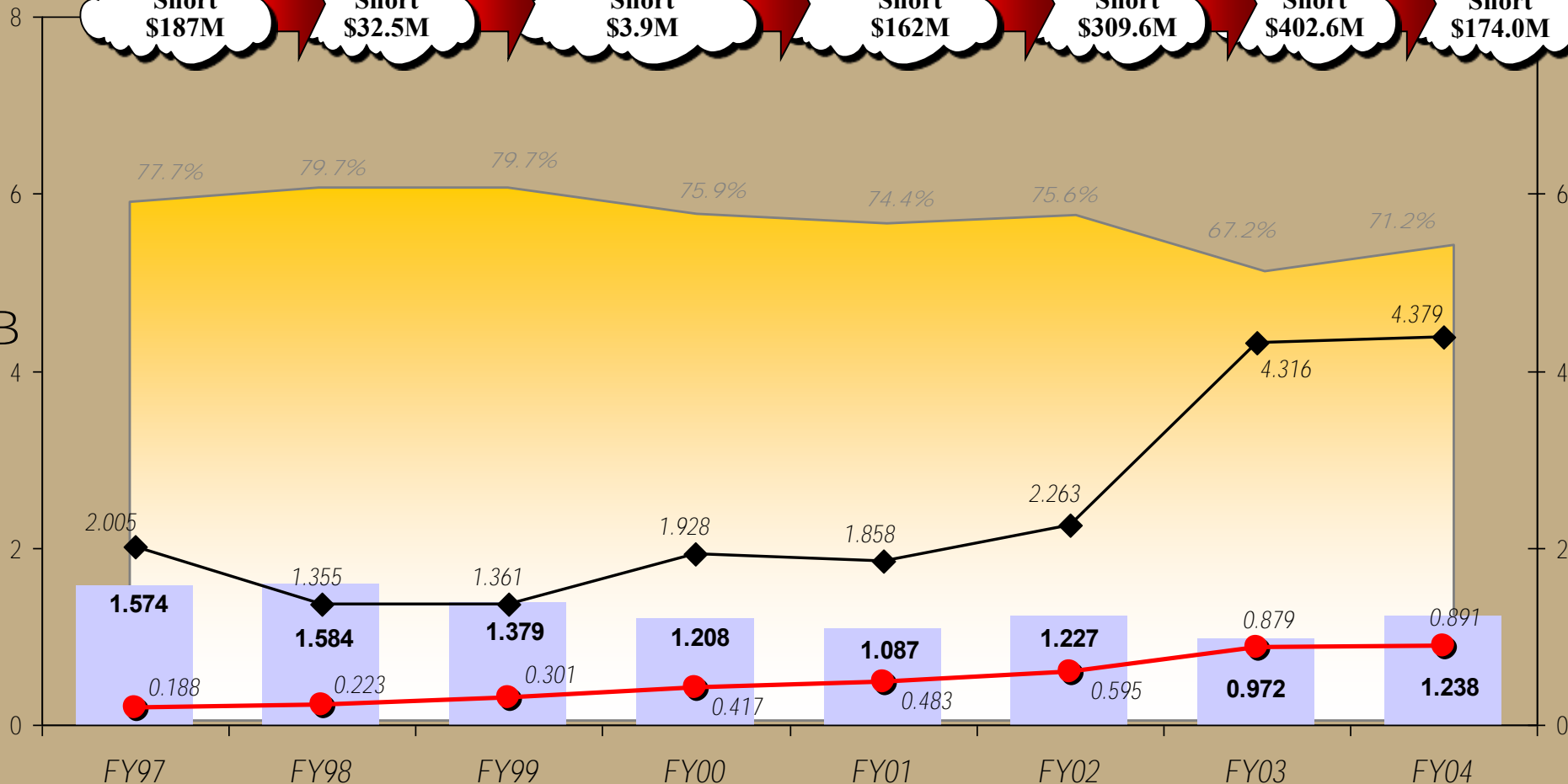
**FY99/00  
Short  
\$3.9M**

**FY01  
Short  
\$162M**

**FY02  
Short  
\$309.6M**

**FY03  
Short  
\$402.6M**

**FY04  
Short  
\$174.0M**

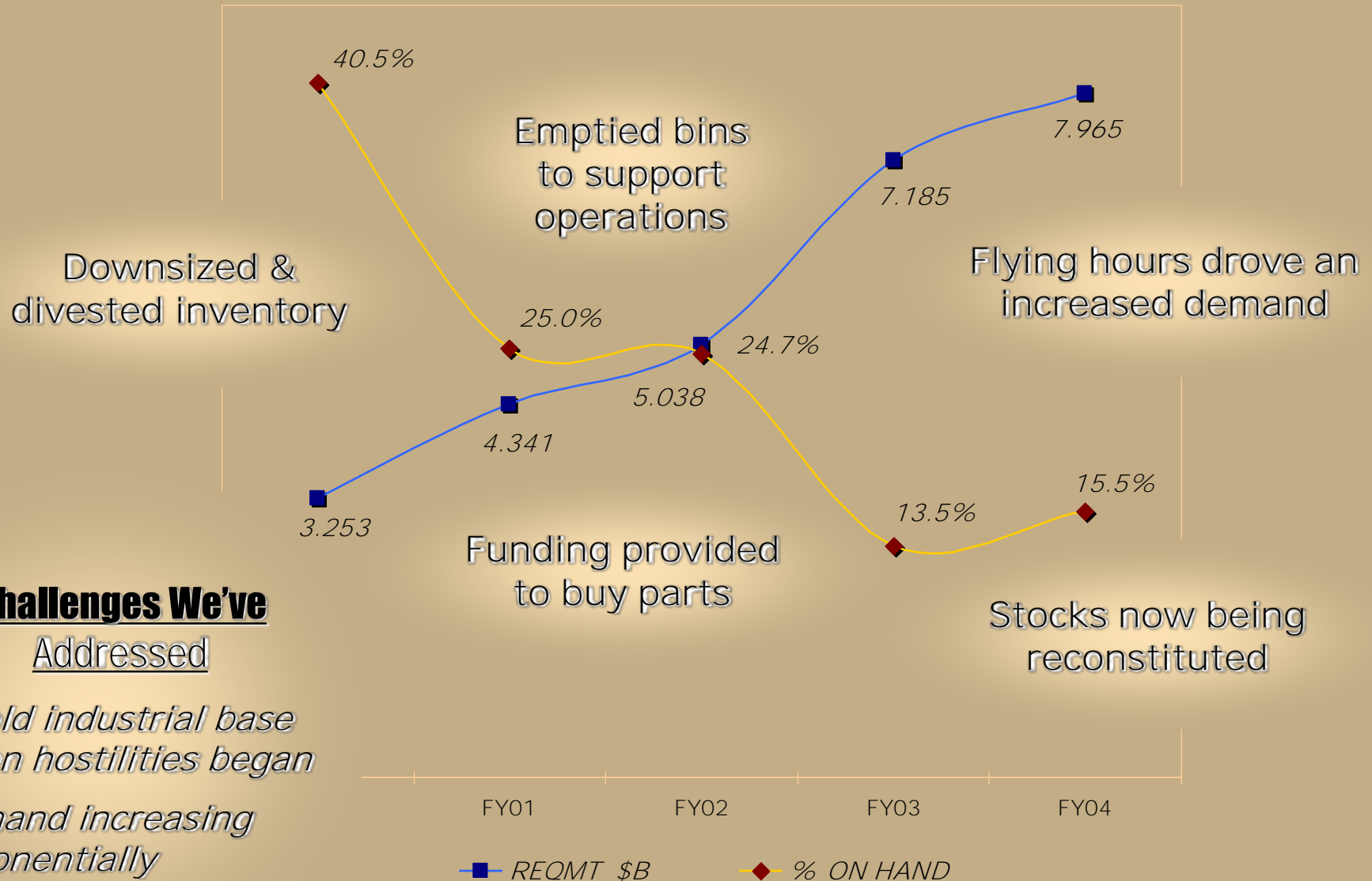


\*OH Servicable Stock Due-Out Demands





# Inventories – Now Trending In The *Right* Direction



This tracks the percent of the total requirement that is on the shelf and available for issue

















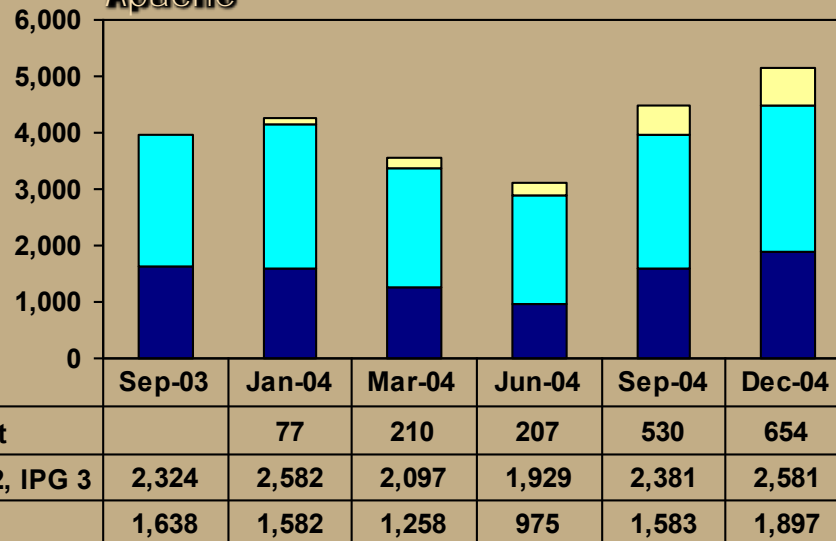


# Backorder Trends

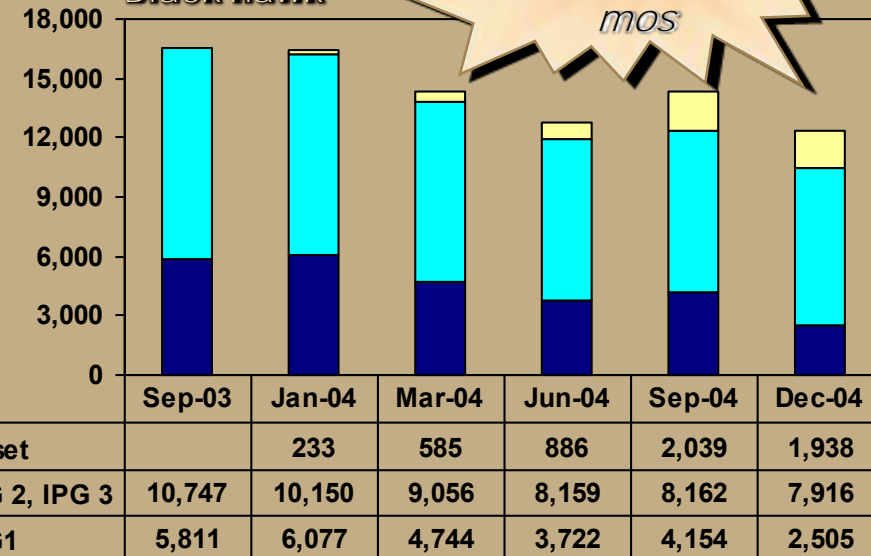
## Recent History

*IPG1 reduced  
33% over past 12  
mos*

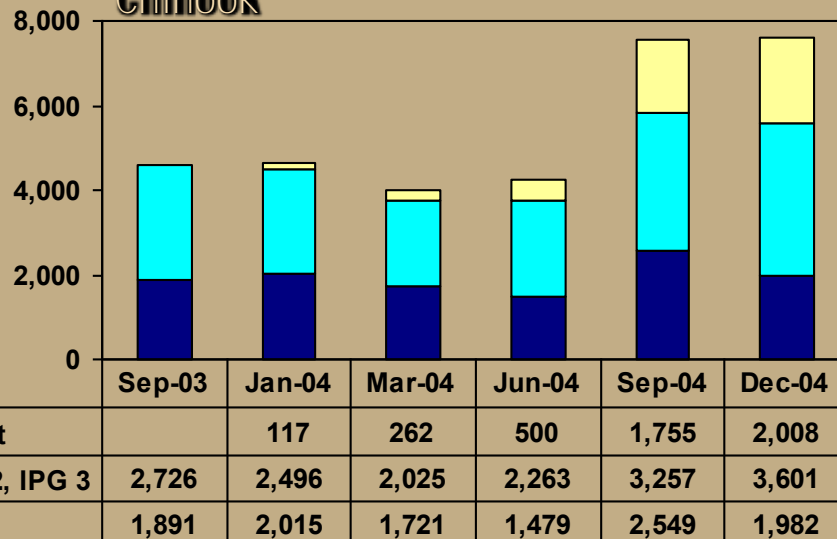
### Apache



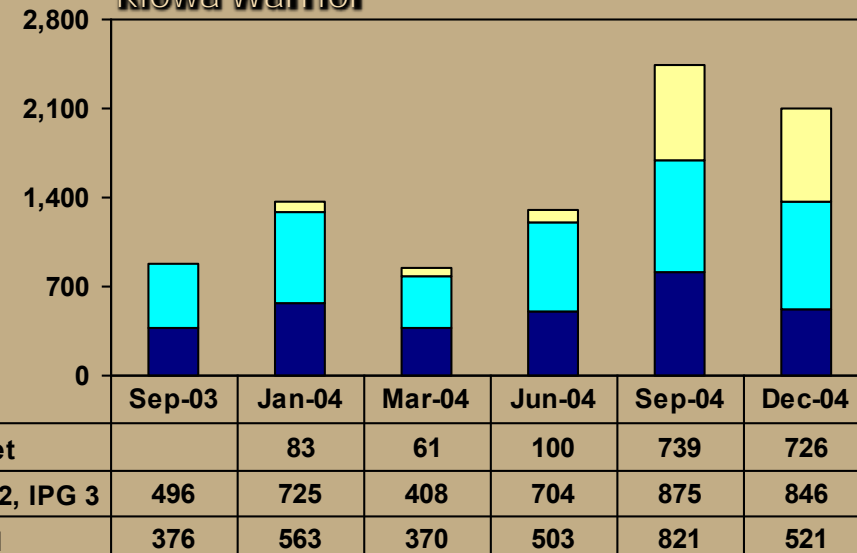
### Black Hawk



### Chinook



### Kiowa Warrior



*Reset now constitutes single largest customer*









# 1/4 CAV, Baqubah, Iraq A Warrior's "Thank You"

Dear Sir,

I am CW3 Robert Carpenter. I am writing to express my gratitude for the quality rotor blades that Bell has produced for my helicopter, the OH-58D Kiowa Warrior.

On April 7th, while flying a combat mission near the city of Baqubah, Iraq my KW was struck on one main rotor blade by an RPG (rocket propelled grenade). The RPG exploded and destroyed a 4 foot section, leaving about two feet of rotor blade on the end. The spar was also damaged and I still don't know how it held together.

Thank you.

v/r,  
Robert Carpenter  
CW3, U.S. Army



*"...I am writing to express my gratitude for the quality rotor blades that Bell has produced..."*







# What We Are Facing

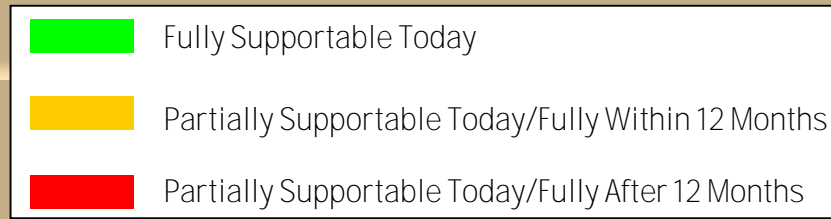
**Demands will increase from FY04 rates ... which were an all time high**

**Support for OEF/OIF units has been exceptional, but improvements must extend to all aviation customers**

The investments are yielding significant deliveries but problem items still must be targeted

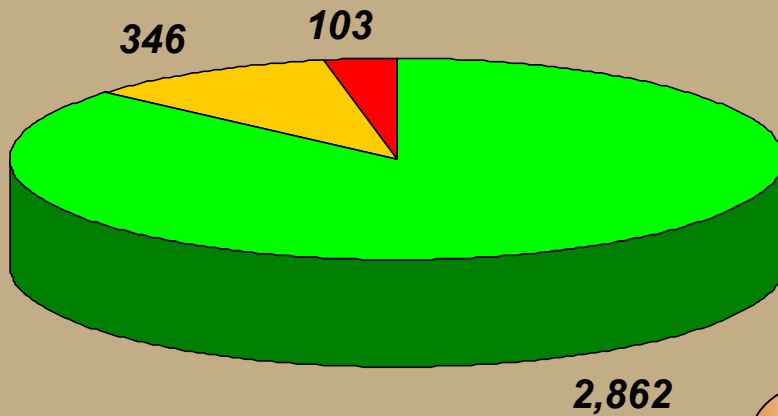


# Individual Item Assessment



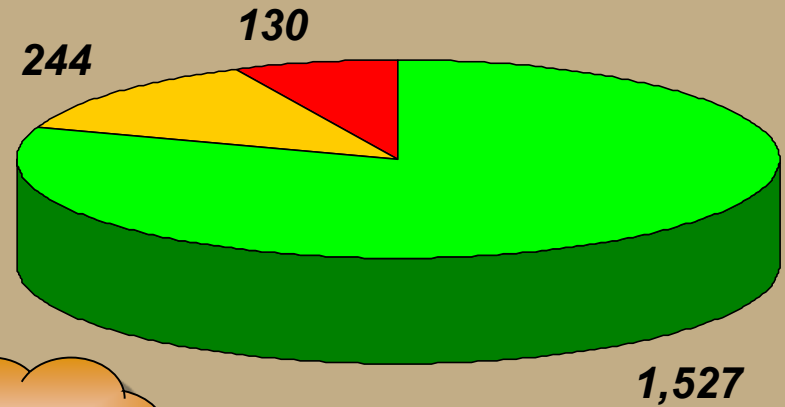
## APACHE

Total Items - 3,311



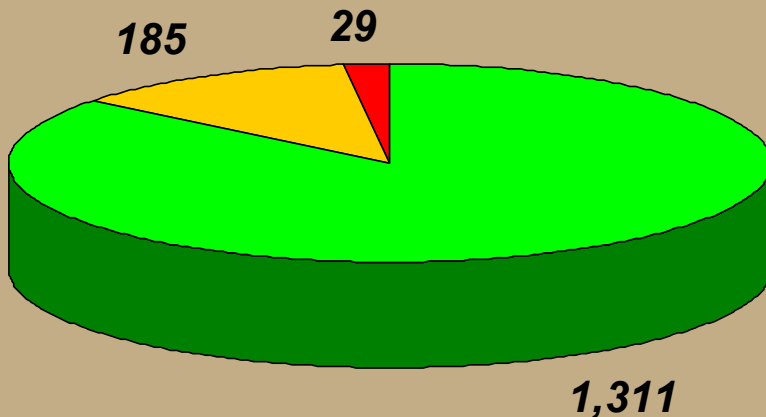
## CHINOOK

Total Items - 1,901



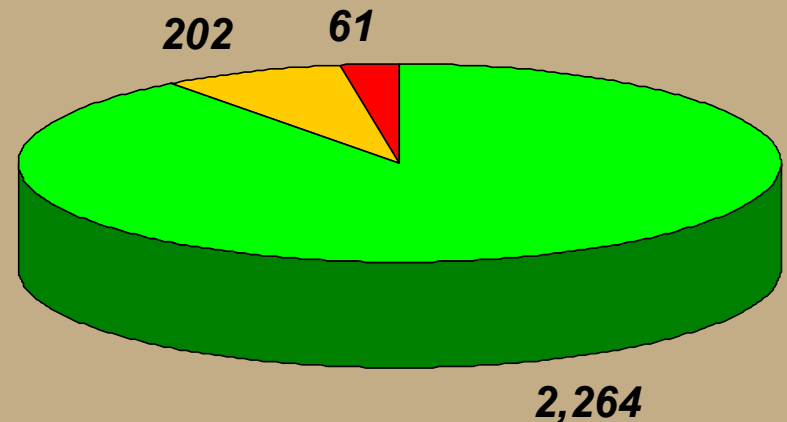
## KIOWA

Total Items - 1,525



## BLACKHAWK

Total Items - 2,527



OVER 85% OF  
ALL ITEMS  
FULLY  
SUPPORTABLE





# Tactical Focus Has Been On Warfighter

## OIF I/OEF IV

(30 SEP 03)

643 Aircraft

268 Non-Mission Capable (NMC)

75 NMC Due to Supply

## OIF II/OEF V

(14 FEB 05)

537 Aircraft

78 NMC

7 NMC Due to Supply



- **Emphasis now on “Preset” of aircraft** prior to deployment
- OIF/OEF units first to receive critical parts delivered from industry
- Focusing on NMCS is the quickest means for AMCOM to influence theatre readiness





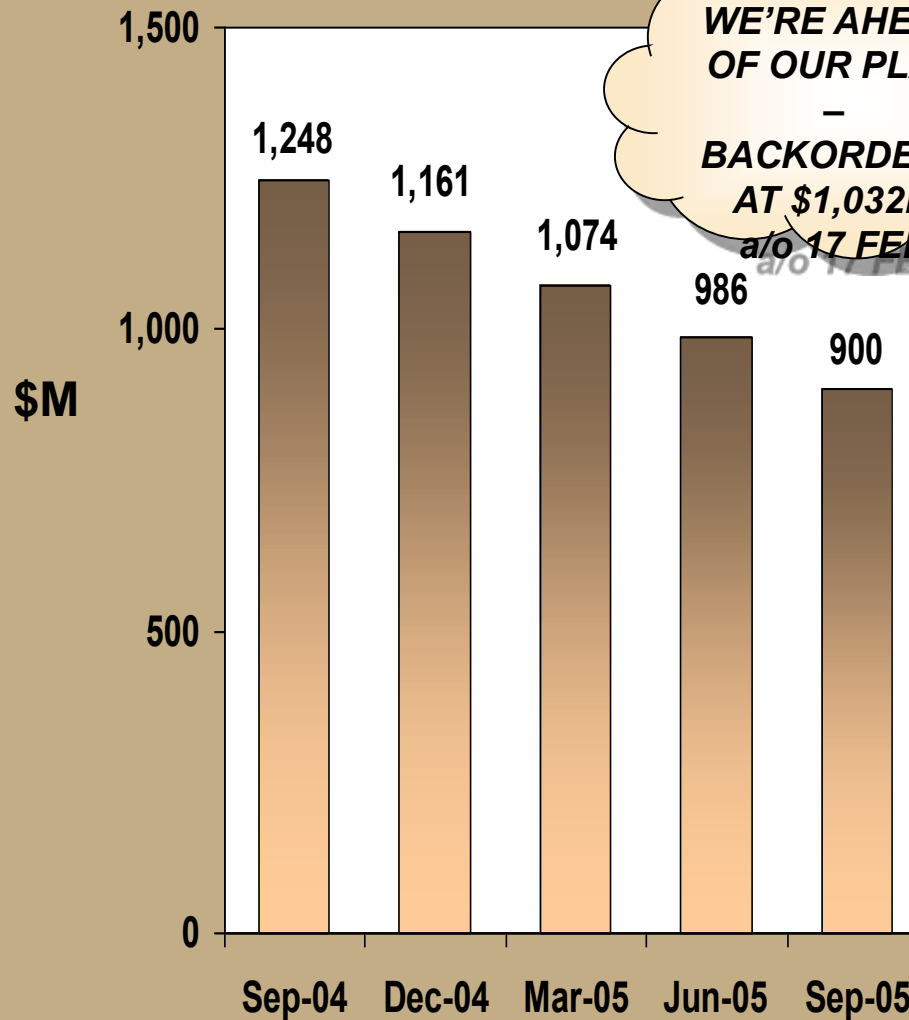
# BACKORDER REDUCTION PLAN

17% Reduction in Requisitions

34% Reduction in Quantities

WE'RE AHEAD OF OUR PLAN

—  
BACKORDERS  
AT \$1,032M  
a/o 17 FEB



Sep-04

\$239M

**\$274M**

Sep-05 GOAL

\$173M



Sep-04

\$388M

**\$303M**

Sep-05 GOAL

\$280M



Sep-04

\$447M

**\$329M**

Sep-05 GOAL

\$322M



& NFM

Sep-04

\$174M

**\$126M**

Sep-05 GOAL

\$125M



# What Customers Have Seen Over the Past 12 Months

**\$350M+ in engines, transmissions, blades, and APUs received over past 180 days - additional \$800M being delivered over next 36 mos**

***On hand inventory for Top 18 readiness drivers up \$58M***

Backorders Decreased

Assets Available for Issue Increased

701C Engine

35%

60+

Blackhawk APUs

66%

86%

Chinook APUs

22%

200%

Blackhawk

A Transmissions

35%

200%

L Transmissions

35%

200%

***Leading edge maintenance on Blackhawk Main Rotor Blades***



***"Preserving Valuable Assets"***

Blackhawk  
Solenoid Valve

\$3.8M

Kiowa Warrior  
Power Supply

\$5.6M



# Industry Has Responded

## Top 25 Apache & Chinook Items

- Schedule improvements ranged from 10-80%
- Rotor Shaft
  - Yield increased 64%
  - Production lead time decreased 83%
- Blade
  - Production cycle decreased from 23 to 10 months

## Sikorsky Blackhawk

- Production improved across the board
- Main Blade
  - Production has increased from 20 to 75/month
- Tail Blades
  - Production has increased from 20 to 60
- Structural Supports (*Top Reset Item*)
  - Ramped from a cold case of 20/mo to 200/month by JAN 05

## Kiowa Warrior

- Repair turn-around improved 68%
- Mast Mounted Sight
  - Production time reduced 44%

## Organic Depot Capacity

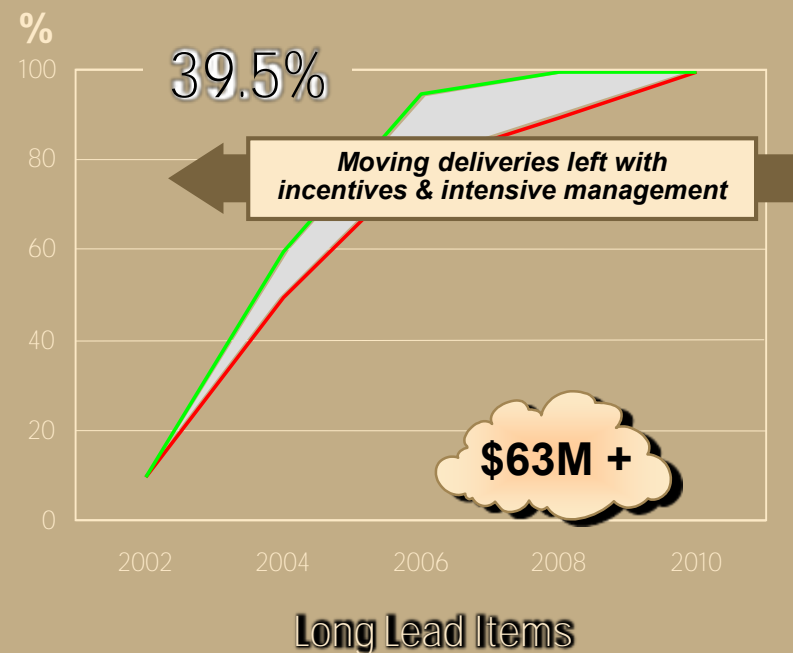
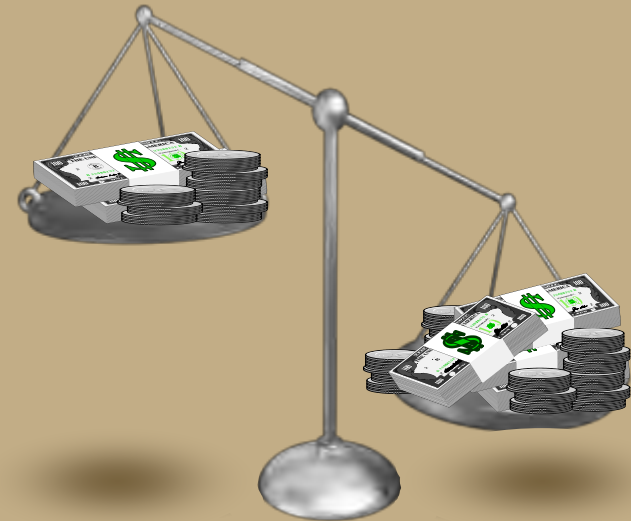
- Expanding through partnership contracts with industry



# The Focus Is On Production

<u>Deliveries</u>		<u>Investment</u>
\$280.6	Sikorsky	\$1,022.6
44.4	Lockheed	476.4
694.8	GE	839.8
112.4	Boeing, Phil	458.6
83.8	Boeing, Mesa	264.2
182.2	Honeywell	386.1
75.3	Parker Hannifin	218.8
64.1	DRS Tech	170.4
30.0	Bell	178.6
47.2	Raytheon	74.9
<b>\$1,614.8</b>		<b>\$4,090.4</b>

**Total  
All Suppliers  
\$5,869.0**







# What We Are Facing

**Demands will increase from FY04 rates ... which were an all time high**

**Support for OEF/OIF units has been exceptional, but improvements must extend to all aviation customers**

**The investments are yielding significant deliveries but problem items still must be targeted**

**Limited supplier base and age of technologies challenges more aggressive accelerations**





- **2nd & 3rd tier vendor base diminishing while existing sources are saturated**
  - Timken only qualified sources for certain bearings
  - Primes, OEMs, and depots chasing the same single sources for piece parts
  - Qualification process for new sources requiring First Article Test (FAT) and/or Product Verification Audit (PVA) being streamlined
- **Depot production offers most expedient deliveries**
  - Unserviceables delayed in theatre – combination of TASM and Desert Express have improved performance
  - CCAD Partnerships have enabled component production to grow by more than \$100M from FY04 levels







# *IEEE Std 828-1990*

## *IEEE Standard for Software Configuration Management Plans*

## *IEEE Std 828-1990*

### **Purpose:**

**Establishes the minimum required contents of a Software Configuration Plan and defines the specific activities to be addressed and their requirements for any portion of a software product's life cycle.**



## *IEEE Std 828-1990*

**Use of an IEEE Standard is wholly voluntary.**

**The existence of an IEEE Standard does not imply that there are no other ways to produce, test, measure, purchase, market, or provide other goods and services related to the scope of the IEEE Standard.**

## *IEEE Std 828-1990*

**This Standard applies to the entire life cycle of critical software.**

**The Software Configuration Management Plan (the Plan) documents**

- **what SCM activities are to be done,**
- **how they are to be done,**
- **who is responsible for doing specific activities,**
- **when they are to happen, and**
- **what resources are required.**

## ***IEEE 828-1990***

**The Plan shall be partitioned into the following six classes:**

- 1. Introduction: Purpose, Scope, Key Terms, and References.**
- 2. SCM Management: (*WHO?*) Identifies the responsibilities and authorities for accomplishing the planned activities.**
- 3. SCM Activities: (*WHAT?*) Identifies all activities to be performed.**

## *IEEE 828-1990*

**The Plan shall be partitioned into the following six classes:**

- 4. SCM Schedules: (WHEN?) Identifies the required SCM activities with the other activities in the project.**
- 5. SCM Resources: (HOW?) Identifies tools and physical and human resources required for execution of the plan.**
- 6. SCM Plan Maintenance: Identifies how the Plan will be kept current while in effect.**

# *IEEE 828-1990*

## Introduction:

1. Overview of the software development project.
2. Identification of the Software CI (s) to which SCM will be applied.
3. Identification of other software to be included (e.g., support or test software).
4. Relationship of SCM to the hardware or systems configuration management activities.
5. The degree of formality, dept of control, and portion of the software life cycle for applying SCM.
6. Limitations, such as time constraints.
7. Assumptions that might have an impact on the cost, schedule, or ability to perform defined SCM activities.



# ***IEEE 828-1990***

## **SCM Management:**

- 1. Organization**
- 2. SCM Responsibilities**
- 3. Applicable Policies, Directives, and Procedures**

# *IEEE 828-1990*

## **SCM Activities:**

- 1. Configuration Identification**
- 2. Configuration Control**
- 3. Status Accounting**
- 4. Configuration Audits and Reviews**

# *IEEE 828-1990*

## **1. Configuration Identification**

- **Identifying Configuration Items**
- **Naming Configuration Items**
- **Acquiring Configuration Items**

## **2. Configuration Control**

- **Requesting Changes**
- **Evaluating Changes**
- **Approving or Disapproving Changes**
- **Implementing Changes**

## ***IEEE 828-1990***

- 3. Configuration Status Accounting**
- 4. Configuration Audits and Reviews**
- 5. Interface Control**
- 6. Subcontractor/Vendor Control**

# ***IEEE 828-1990***

## **SCM Schedules:**

- 1. Establishes the sequence and coordination for the identified SCM activities and events.**
- 2. Dependencies among all SCM activities (Milestones and events).**
  - Configuration Baselines**
  - Implementation of Change Control**
  - Start and completion dates for a Configuration Audit**
- 3. Duration of the Plan.**



# ***IEEE 828-1990***

## **SCM Resources:**

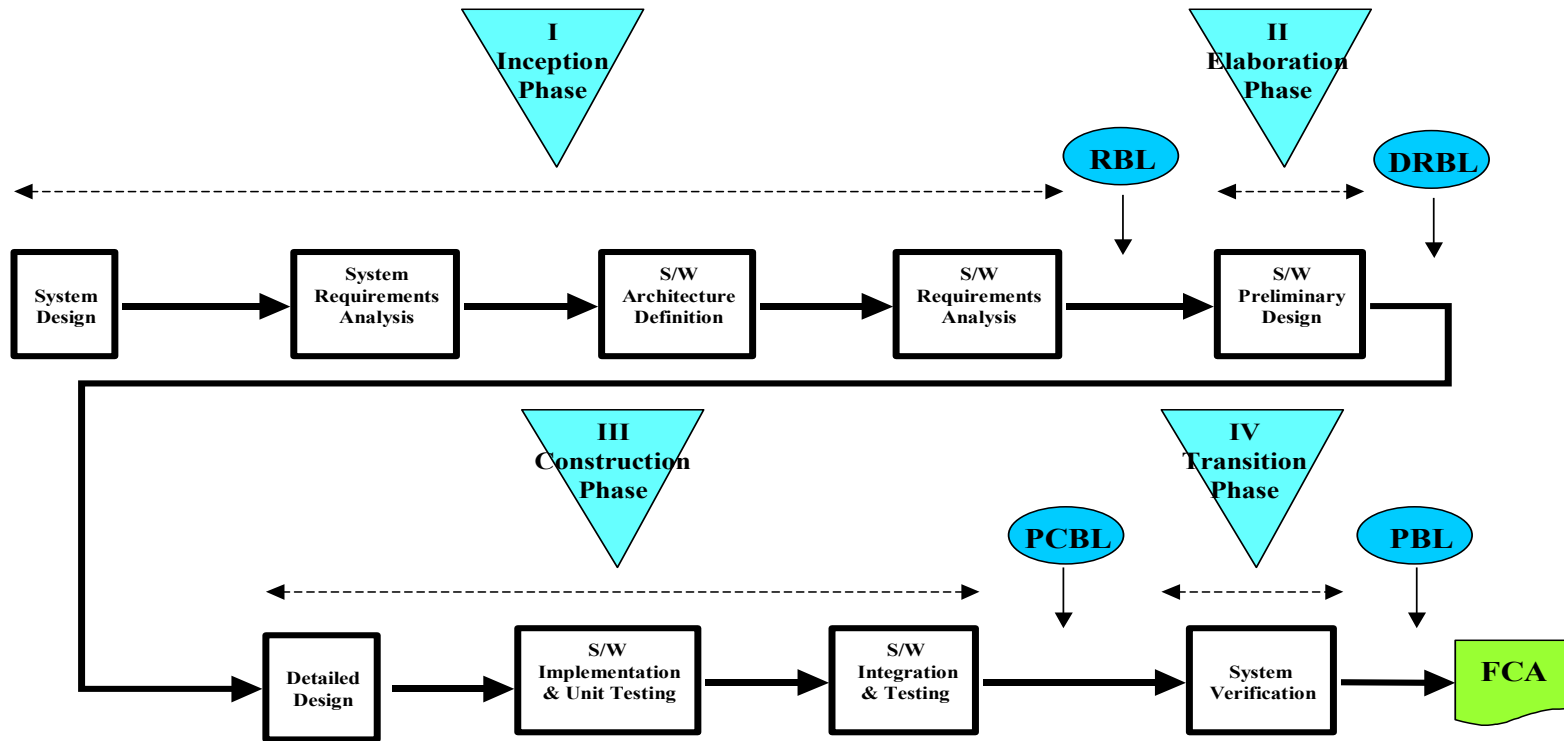
- 1. Software Tools**
- 2. Techniques**
- 3. Equipment**
- 4. Personnel**
- 5. Training necessary for the implementation of the specified SCM activities**

## ***IEEE 828-1990***

### **SCM Plan Maintenance:**

- 1. Who is responsible for monitoring the Plan.**
- 2. How frequently updates are to be performed.**
- 3. How changes to the Plan are to be evaluated and approved.**
- 4. How changes to the Plan are to be made and communicated.**

## IEEE 828-1990



Baselines & Audits	
RBL	Requirements Baseline
DRBL	Design Release Baseline
PCBL	Product Configuration Baseline
PBL	Product Baseline
FCA	Functional Configuration Audit

Software Lifecycle Phases	
I	Inception Phase
II	Elaboration Phase
III	Construction Phase
IV	Transition Phase

## ***IEEE 828-1990***

### **Summary:**

**The IEEE Standard permits significant flexibility in preparing an SCM Plan.**

**A successful Plan reflects its project environment.**

**It should be written in terms familiar to its users and should be consistent with the development and procurement processes of the project.**

**NDIA**

*IEEE 828-1990*







# Military Engineering Data Asset Locator System (MEDALS) Data Quality

Warren M Scott

**Federal Center** 269.961.5509  
**74 Washington Ave N STE 7** DSN 661.5509  
**Battle Creek MI** FAX 269.961.4715  
**49017-3084**  
**E-Mail** [warren.scott@dla.mil](mailto:warren.scott@dla.mil)

Defense Logistics Information Service  
Customer Support Toll Free: 1-877-352-2255

8/31/2016





# The Defense Procurement Reform Act of 1984 Public Law 98-525, Section 1252

---



**Mandated procedures for developing, to the maximum extent practical, a centralized system to identify the repository within the Department of Defense (DoD) responsible for technical data relating to an item and the extent of data on file in the repository with respect to that item.**



# MEDALS

---

- **The DoDs Centralized Indexing Authority**
- **Getting the Customer to the Desired Repository Faster**
- **The MEDALS program supports over 50,000 queries per month**
- **Saves the Repositories Time, Money, and Resources**





# MEDALS

## Indexing A Family of Systems

**JEDMICS**

**CENTRA**

**ACMS**

**DBASE**

**ATIS**





# MEDALS CURRENTLY INDEXES OVER 42 MILLION ASSETS

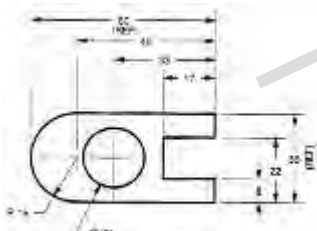
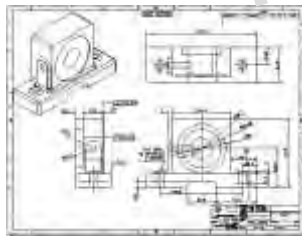
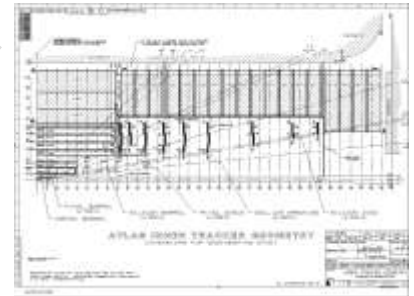


Figure 10 Couple of a directly driven axle







# Participating Repositories

---

## **DLA**

**DSC-Columbus**  
**DSC-Richmond**  
**DSC-Philadelphia**  
**DLIS-NATO**  
**DAPS, Newport, RI**

Boeing

Lockheed

## **Air Force**

**OO-ALC, Hill AFB, UT**  
**OC-ALC, Tinker AFB, OK**  
**WR-ALC, Warner Robins AFB, GA**

General  
Dynamics

Sperry  
Univac

## **Army**

**AMCOM, Redstone Ars., Huntsville, AL**  
**ARDEC, Picatinny Ars., Dover, NJ**  
**TACOM, Warren, MI**  
**Rock Island Ars., Rock Island, IL**  
**CECOM, Ft. Monmouth, NJ**  
**Edgewood Chemical  
and Biological Command**

Sikorsky

Honeywell

## **Marine Corps**

**MCLB, Albany, GA**

Raytheon

Litton



# Participating Repositories

---

General  
Electric

Lucent

**Navy**

Boeing

Lockheed

**NSY, Portsmouth, NH**

**NAVICP-M, Mechanicsburg, PA**

**NSWC, Crane, IN**

**NSWC, Indian Head, MD**

**NSWC, Dahlgren, VA**

**NSY Norfolk, Portsmouth, VA**

**NSY Puget Sound, Bremerton, WA**

**NUWC, Keyport, WA**

**NSY, Pearl Harbor, HI**

**NCSS, Panama City, FL**

**NATEC, San Diego, CA**

**NSY Puget Sound, Det Boston, MA**

**NUWC Newport, RI**

**SUPSHIP Bath Iron Work, Bath, ME**

**SUPSHIP Newport News, VA**

**NGSS, Pascagoula, MS**

**NSWC, Port Hueneme, CA**

**NSWC Indian Head, Det Earl, NJ**

**SPAWAR Charleston (**Coming soon**)**

Northrop  
Grumman

Litton

General  
Dynamics

Eaton



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NAVSEA Repository  
List By Class Ship &  
Weapons System

Directory of DoD  
Engineering Data  
Repositories  
(Replaces MIL-  
HDBK-331)

MILITARY ENGINEERING DATA  
ASSET LOCATOR SYSTEM



YOUR GATEWAY TO TECHNICAL  
DATA INFORMATION



Managed by the Defense Logistics Information Service, the Military Engineering Data Asset Locator System (MEDALS) is an automated information system that serves as the central index of engineering data for the distribution, maintenance, and associated data and management system that the WEB repository. MEDALS maintains and indexes data of technical information. MEDALS is an interactive on-line system that links you to technical data by phone, mail, FAX, E-mail, or electronic order requests. A batch input feature is also available that permits users to submit high volume inquiries for drawing locations directly on-line or through other multi-media (e.g. CD-ROM, floppy disk, or diskette). Access to the MEDALS indexing data does not imply or grant access to the technical data indexed.

**APPLYING FOR ACCESS  
IS QUICK AND EASY**

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# CONTRACTOR ACCESS

---

- Must have a DoD Sponsor
- Qualified U.S. Contractor is certified via the Military Critical Technical Data Agreement, DD Form 2345
- The contractor (CAGE) organization has been verified to be in good standing with the DoD
- A valid Registration for Scientific and Technical Information Services, DD Form 1540, is on file with the Defense Technical Information Center (DTIC)
- National Agency Check (NAC) or equivalent type of Investigation



# CONTRACTOR ACCESS

---

- The MEDALS program manager reserves the right to withdraw services from any contractor individual or parent company for any misuse of the intended use of the MEDALS program
- Access to the MEDALS program does not imply or grant access to the technical data indexed
- MEDALS access when engaged in an active contract, project, or program where within its scope it states that a tool such as MEDALS is required or when a DoD Sponsor determines a need for services is required
- MEDALS access is not available to foreign nationals





# CONTRACTORS ACCESSING MEDALS

---

**ALPHIA DATA CORP**

**AMSEC LLC**

**APPLIED ORDINANCE TECHNOLOGIES**

**ARINC ENGINEERING SERVICE**

**BMT DESIGNERS AND PLANNERS**

**BOEING**

**CACI**

**CACI – ASG**

**CHEROKEE INFORMATION SERVICES**

**EG&G**

**ENVISIONEERING**

**GENERAL DYNAMICS**

**GRYPHON**

**IBM**

**INTERGRAPH**

**LOCKHEED MARTIN INFORMATION  
TECHNOLOGIES**

**MADISON RESEARCH CORP**

**ML TECHNOLOGIES**

**NGIT**

**PECKHAM**

**QUALITY PERFORMANCE INC**

**QUANTI TECH INC**

**REGENT SYSTEMS INC**

**SAIC**

**SCIENCE APPLICATION INTERNATIONAL  
CORP**

**SEMCOR INC**

**SOBRAN INC**

**SUPPORT SYSTEMS ASSOC. INC**

**TEAM KEYPORT SERVICES**

**UNIDYNE**

**WFI GOVERNMENT SERVICES INC**



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Directory of DoD  
Engineering Data  
Repositories  
(Replaces MIL-  
HDBK-331)

YOUR GATEWAY TO TECHNICAL  
DATA INFORMATION

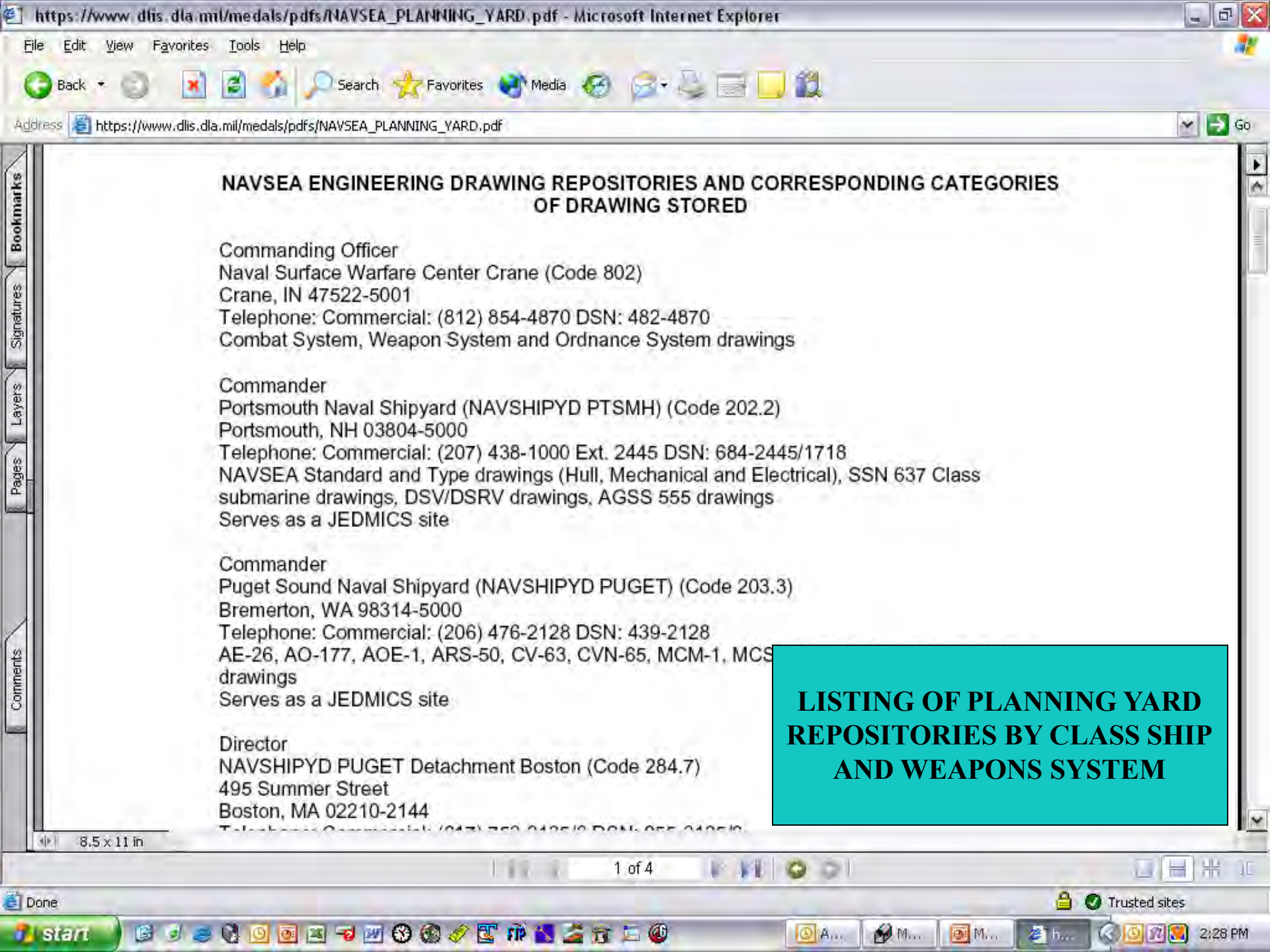


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# Getting The Navy Researcher To The Right Repository

Customer Service: 1-877-352-2255 or DSN 661-7766 Email: [DLIS-Support@dlis.dla.mil](mailto:DLIS-Support@dlis.dla.mil)  
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## NAVSEA ENGINEERING DRAWING REPOSITORIES AND CORRESPONDING CATEGORIES OF DRAWING STORED

Commanding Officer

Naval Surface Warfare Center Crane (Code 802)

Crane, IN 47522-5001

Telephone: Commercial: (812) 854-4870 DSN: 482-4870

Combat System, Weapon System and Ordnance System drawings

Commander

Portsmouth Naval Shipyard (NAVSHIPYD PTSMH) (Code 202.2)

Portsmouth, NH 03804-5000

Telephone: Commercial: (207) 438-1000 Ext. 2445 DSN: 684-2445/1718

NAVSEA Standard and Type drawings (Hull, Mechanical and Electrical), SSN 637 Class submarine drawings, DSV/DSRV drawings, AGSS 555 drawings

Serves as a JEDMICS site

Commander

Puget Sound Naval Shipyard (NAVSHIPYD PUGET) (Code 203.3)

Bremerton, WA 98314-5000

Telephone: Commercial: (206) 476-2128 DSN: 439-2128

AE-26, AO-177, AOE-1, ARS-50, CV-63, CVN-65, MCM-1, MCS drawings

Serves as a JEDMICS site

Director

NAVSHIPYD PUGET Detachment Boston (Code 284.7)

495 Summer Street

Boston, MA 02210-2144

Telephone: Commercial: (617) 352-2125 DSN: 655-2125

**LISTING OF PLANNING YARD  
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AND WEAPONS SYSTEM**





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Comprehensive  
Listing of repositories

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## SERVICE REPOSITORIES

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### AIR FORCE

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#### Address

#### Phone/E-Mail

Engineering Data Support Center  
OC-ALC/LGLDOS  
3001 Staff Dr., Ste 1AC83A  
Tinker AFB OK 73145-3041  
Repository Indexed in MEDALS  
URL to OC-ALC WEB Repository  
<https://jedmics.tinker.af.mil>

DSN 336-4422  
COM (405) 736-4422  
  
[oc-alc.lgldo.cs@tinker.af.mil](mailto:oc-alc.lgldo.cs@tinker.af.mil)

Engineering Data Support Center  
OO-ALC/LGVPE  
6032 Fir Ave., Bldg 1237  
Hill AFB UT 84056-5820  
Repository Indexed in MEDALS  
URL to OO-ALC WEB Repository  
<https://jedmics.hill.af.mil>

DSN 775-6078  
COM (801) 775-6078  
  
[hill.jedmics@hill.af.mil](mailto:hill.jedmics@hill.af.mil)

Engineering Data Support Center  
WR-ALC/LGEDB  
480 Second Street, Suite 200  
Robins AFB GA 31098-1640  
Repository Indexed in MEDALS  
URL to WR-ALC WEB Repository  
<https://jedmics.robins.af.mil>

DSN 472-3008/3009  
COM (478) 222-3008/3009  
  
[jedmics@robins.af.mil](mailto:jedmics@robins.af.mil)





# Inquiries Based On Technical Drawing Information

---

## ■ Drawing Asset Identifier

- ◆ Drawing Number
- ◆ CAGE Code
- ◆ Document Type
- ◆ Revision Level

## ■ Drawing Number/CAGE

## ■ Drawing Number

## ■ Part Number/CAGE

## ■ Part Number

## ■ NSN/NIIN

## ■ Document Title





**AIR FORCE HOLDING  
REVISION "N"**

**ARMY HOLDING  
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## MEDALS Pick List by Document Number

Document Number: 11838581

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Location	CAGE	Doc Type	Rev Lvl	Document Title	DRC	PCI
<a href="#">WR-ALC</a> <a href="#">MANUAL RPTY</a>	<a href="#">19204</a>		J	Title Unavailable	<a href="#">U</a>	
<a href="#">WR-ALC</a>	<a href="#">19204</a>		J	Title Unavailable	<a href="#">U</a>	
<a href="#">TACOM-ARDEC</a>	<a href="#">19204</a>		K	Title Unavailable	<a href="#">U</a>	
<a href="#">TACOM-ARDEC</a>	<a href="#">19204</a>		L	Title Unavailable	<a href="#">U</a>	
<a href="#">TACOM-ARDEC</a>	<a href="#">19204</a>		M	Title Unavailable	<a href="#">U</a>	
<a href="#">TACOM-ARDEC</a>	<a href="#">19204</a>		N	Title Unavailable		
<a href="#">WR-ALC</a>	<a href="#">19204</a>		N	Title Unavailable		
<a href="#">TACOM-ARDEC</a>	<a href="#">19204</a>		P	Title Unavailable		
<a href="#">TACOM-ARDEC</a>	<a href="#">19204</a>	<a href="#">SQ</a>	A	Title Unavailable		
<a href="#">NAVICP-M</a>	<a href="#">19204</a>	<a href="#">1A</a>	J	Title Unavailable		
<a href="#">RIA</a>	<a href="#">19204</a>		K	Title Unavailable		
			L	Title Unavailable		
			M	Title Unavailable		

**NAVY HOLDING REVISION "J"**

**KNOWING WHERE  
ALL REVISIONS  
ARE LOCATED**



## Repository Detail

<u>Document Number</u>	<u>CAGE</u>	<u>Doc Type</u>	<u>Rev Lvl</u>	<u>DRC</u>	<u>PCI</u>	<u>Dist Stmt</u>
0213-1-1074	57958		E	U		
<u>Doc Title</u>						
<u>Doc Size</u>	<u>Nbr of Sheets</u>	<u>Doc Nuc</u>	<u>Doc Sec</u>	<u>NOFORN</u>	<u>SUBSAFE</u>	<u>File Index Date</u>
		N	N			1999032

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<https://edm.monmouth.army.mil/cgi-bin/showDoc.exe?bkLoginFVPV.html>[File Type Information](#)[Associated Weapon System Codes](#)[List Associated NSNs](#)[List Associated Part Numbers](#)

## Repository Information

## Mailing Address:

US ARMY  
COMMUNICATIONS AND  
ELECTRONIC COMMAND  
AMSEL-IM-T-CS-A  
BLDG 1152 VAIL HALL  
FT. MONMOUTH

CEC

NJ

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WEB REPOSITORY ACCESS**

**URL TO REPOSITORY  
SIGN ON SCREENS**



*U.S. Army Communications-Electronics Command  
Engineering Data Management Branch*

*Product Data Management 5.3.3*

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User ID

Password

CENTRA 2000  
Web Interface

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Web Interface

Login

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**AND YOU'RE  
THERE**

Trouble logging in? Forgot password?

E-Mail [Jose.Troche@mail1.monmouth.army.mil](mailto:Jose.Troche@mail1.monmouth.army.mil)

Do not include password information in the email!

We will never ask you what your password is.

*Send WEB SITE Comments/Questions to Brian Kelly  
([Brian.Kelly@mail1.monmouth.army.mil](mailto:Brian.Kelly@mail1.monmouth.army.mil))*



# MEDALS TO REPOSITORY WEB INTERFACES

---

## CURRENTLY ACTIVE INTERFACES

- DSC-Columbus
- DSC-Philadelphia
- DSC-Richmond
  
- AMCOM, Redstone Ars, Huntsville, AL
- TACOM, Warren, MI
- Rock Island Ars., Rock Island, IL
- CECOM, Ft. Monmouth, NJ
  
- OO-ALC, Hill AFB, UT
- OC-ALC, Tinker AFB, OK
- WR-ALC, Warner Robins AFB, GA

- NAVICP-M, Mechanicsburg, PA
- NUWC, Keyport, WA
- NATEC, San Diego, CA
- NSWC, Port Hueneme, CA
- NGSS, Pascagoula, MS
- SUPSHIP, Bath, ME

## FUTURE INTERFACES

- ARDEC, Picatinny Ars., Dover, NJ
- MCLB, Albany, GA
- NSWC, Crane, IN





# MEDALS

---

## ■ WHAT MEDALS IS "NOT"

- ◆ A repository of digital images
  - ▲ Digital images/ technical data are the sole responsibility of the repository
- ◆ A pass through or portal to bypass access and security protocols for digital images/technical data maintained by a repository
  - ▲ The repository is responsible for the access and permissions to their digital images/technical data
  - ▲ MEDALS will not violate Proprietary Data issues or intellectual Property issues
- ◆ The owner of the data indexed
  - ▲ MEDALS is a steward of the repositories indexed data



# MEDALS

---

## ■ WHAT THE MEDALS PROGRAM "IS"

- ◆ A tool for the repositories in assisting customers in locating digital images/technical data
  - ▲ Using MEDLAS first alleviates the necessity of the repository to field queries regarding the availability of digital images/technical data
  - ▲ A way to reduce infrastructure within a repository: saving time, money, & resources
- ◆ MEDALS is always available
  - ▲ DLIS staffs a 24/7 customer support center
  - ▲ MEDALS PMO available during business hours for customer support



# MEDALS & EIA-859

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- Where does MEDALS fit in with DM and EIA-859
  - ◆ Contemporary Data Management Model
    - ▲ MEDALS is available as a tool for customers to verify location prior to repository access. First step in the process of determining if a repository is maintaining specific data



# MEDALS & EIA-859

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- 4.0 Principle: Identify Data Products and Views so That Their Requirements and Attributes can be Controlled
  - ◆ “Data is of value to the enterprise when it can be located or accessed by users. Metadata, *or data about data*, is essential for data managers and others to identify, catalog, store, search for, locate, and retrieve data”
    - ▲ MEDALS is the fundamental nature of this concept



# EIA-859 Table 4-1 Metadata Examples & MEDALS Tables

## Attribute

- Author
- Classification
- Contract Identifier
- Date Modified
- Date Originated
- Document Number
- Document Owner
- Document Size
- Document Type
- Environmental Requirements
- File Format
- File Size
- File Type
- Enterprise Identifier
- Related Document ID
- Related Product ID
- Revision Identifier
- Rights
- Storage Medium

## MEDALS Attributes

- Repository Location
- Repository Information
- Security Code
- Distribution statement
- File Index Date
- Document Number
- Document Size
- Number of Sheets
- Document Type
- Nuclear Hardness Critical Items/Processes (HCI) or (HCP)
- Yes/No field indicating distribution authorization to Foreign Nationals
- Level One SUBSAFE
- File Type
- CAGE Code
- Associated Weapons Systems Code
- Associated Part Numbers
- **Associated NSN's**
- Revision Level
- Data Rights Code





# CONCLUSION

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- The MEDALS program is a logical and complementary fit with EIA-859
  - ◆ Establishing and maintaining an indexing account is easy
    - ▲ MEDALS infrastructure is in place and working, cost wise it is advantageous for the repository
  - ◆ MEDALS is a way to reduce infrastructure within a repository
    - ▲ The burden of fielding inquiries for the availability of digital images/technical data can be avoided through the use of MEDALS
  - ◆ MEDALS is flexible
    - ▲ MEDALS tables or Attributes can be established to fit with EIA-859 requirements



# MEDALS

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# QUESTIONS